LG

Service Manual
KE770

LG

REVISED HISTORY

Editor	Date	Issue	Contents of Changes	S/W Version
K.M.J	2007/01/10	0.1		
K.M.J	2007/03/20	0.2		

The information in this manual is subject to change without notice and should not be construed as a commitment by LGE Inc. Furthermore, LGE Inc. reserves the right, without notice, to make changes to equipment design as advances in engineering and manufacturing methods warrant.

This manual provides the information necessary to install, program, operate and maintain the KE770 .

Table Of Contents

1. INTRODUCTION

1.1 Purpose

This manual provides the information necessary to repair, calibration, description and download the features of the KE770

1.2 Regulatory Information

A. Security

Toll fraud, the unauthorized use of telecommunications system by an unauthorized part (for example, persons other than your company's employees, agents, subcontractors, or person working on your company's behalf) can result in substantial additional charges you're your telecommunications services. System users are responsible for the security of own system. There are may be risks of toll fraud associated with your telecommunications system. System users are responsible for programming and configuring the equipment to prevent unauthorized use. LGE does not warrant that this product is immune from the above case but will prevent unauthorized use of common-carrier telecommunication service of facilities accessed through or connected to it. LGE will not be responsible for any charges that result from such unauthorized use.

B. Incidence of Harm

If a telephone company determines that the equipment provided to customer is faulty and possibly causing harm or interruption in service to the telephone network, it should disconnect telephone service until repair can be done. A telephone company may temporarily disconnect service as long as repair is not done.

C. Changes in Service

A local telephone company may make changes in its communications facilities or procedure. If these changes could reasonably be expected to affect the use of the KE770 or compatibility with the network, the telephone company is required to give advanced written notice to the user, allowing the user to take appropriate steps to maintain telephone service.

D. Maintenance Limitations

Maintenance limitations on the KE770 must be performed only at the LGE or its authorized agents. The user may not make any changes and/or repairs expect as specifically noted in this manual. Therefore, note that unauthorized alternations or repair may affect the regulatory status of the system and may void any remaining warranty.

E. Notice of Radiated Emissions

The KE770 complies with rules regarding radiation and radio frequency emission as defined by local regulatory agencies. In accordance with these agencies, you may be required to provide information such as the following to the end user.

F. Pictures

The pictures in this manual are for illustrative purposes only; your actual hardware may look slightly different.

G. Interference and Attenuation

The KE770 may interfere with sensitive laboratory equipment, medical equipment, etc. Interference from unsuppressed engines or electric motors may cause problems.

H. Electrostatic Sensitive Devices

ATTENTION

Boards, which contains Electrostatic Sensitive Device(ESD), are indicated by the sign.
Following information is ESD handling: Service personnel should ground themselves by using a wrist strap when exchange system boards.
When repairs are made to a system board, they should spread the floor with anti-static mat which is also grounded. Use a suitable, grounded soldering iron. Keep sensitive parts in these protective packages until these are used. When returning system boards or parts such as EEPROM to the factory, use the protective package as described.

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1.3 ABBREVIATION

For the purposes of this manual, following abbreviations apply:

APC	Automatic Power Control
BB	Baseband
BER	Bit Error Ratio
CC-CV	Constant Current - Constant Voltage
CLA	Cigar Lighter Adapter
DAC	Digital to Analog Converter
DCS	Digital Communication System
dBm	abbreviation for the power ratio in dB of the measured power referenced to one milliwatt
DSP	Digital Signal Processing
EEPROM	Electrical Erasable Programmable Read-Only Memory
EGPRS	Enhanced General Packet Radio Service
EL	Electroluminescence
ESD	Electrostatic Discharge
FPCB	Flexible Printed Circuit Board
GMSK	Gaussian Minimum Shift Keying
GPIB	General Purpose Interface Bus
GPRS	General Packet Radio Service
GSM	Global System for Mobile Communications
IPUI	International Portable User Identity
IF	Intermediate Frequency
LCD	Liquid Crystal Display
LDO	Low Drop Output

1. INTRODUCTION

LED	Light Emitting Diode
LGE	LG Electronics
OPLL	Offset Phase Locked Loop
PAM	Power Amplifier Module
PCB	Printed Circuit Board
PGA	Programmable Gain Amplifier
PLL	Phase Locked Loop
PSTN	Public Switched Telephone Network
RF	Radio Frequency
RLR	Receiving Loudness Rating
RMS	Root Mean Square
RTC	Real Time Clock
SAW	Surface Acoustic Wave
SIM	Subscriber Identity Module
SLR	Sending Loudness Rating
SRAM	Static Random Access Memory
STMR	Side Tone Masking Rating
TA	Travel Adapter
TDD	Time Division Duplex
TDMA	Time Division Multiple Access
UART	Universal Asynchronous Receiver/Transmitter
VCO	Voltage Controlled Oscillator
VCTCXO	Voltage Control Temperature Compensated Crystal Oscillator
WAP	Wireless Application Protocol
8PSK	8 Phase Shift Keying

2. PERFORMANCE

2.1 H/W Features

Item	Feature	Comment
Standard Battery	Li-Ion, 800mAh	
AVG TCVR Current	270mA	@PL5
Standby Current	2.3mA	@PP9
Talk time	3hours (GSM TX Level 7)	
Standby time	300 hours (Paging Period:5, RSSI: -85dBm)	
Charging time	2.5 hours	
RX Sensitivity	GSM900 : -105dBm, DCS/PCS : -105dBm	
TX output power	GSM900: 32dBm (Level 5) DCS/PCS: 29dBm (Level 0)	
GPRS compatibility	Class 10	
SIM card type	3V Plug in Type	
Display	176 x 220 pixels, 265K color, TFT	
Status Indicator	Soft icons Key Pad 0 ~ 9, #, *, Navigation Key, Clear Key / Volume key END/PWR Key, Camera key	
ANT	Built in antenna	
EAR Phone Jack	18pin multi port Ear_jack with Remote controller	
PC Synchronization	Yes	
Speech coding	HR/EFR/FR/AMR	
Data and Fax	Yes	
Vibrator	Yes	
Buzzer	No	
Voice Recoding	Yes	
C-Mic	Yes	
Receiver	Yes	
Travel Adapter	Yes	
Options	Hand Strap / Ear phone	

2. PERFORMANCE

2.2 Technical specification

Item	Description	Specification					
1	Frequency Band	**GSM900** • TX: 890 + 0.2 x n MHz • RX: 935 + 0.2 x n MHz (n = 1 ~ 124) **EGSM** • TX: 890 + 0.2 x (n-1024) MHz • RX: 935 + 0.2 x (n-1024) MHz (n = 975 ~ 1023) **DCS1800** • TX: 1710 + (n-511) x 0.2 MHz (n = 512 ~ 885) • RX: TX + 95 MHz **PCS1900** • TX: 1850.2 + (n-512) x 0.2 MHz (n = 512 ~ 810) • RX: TX + 80MHz					
2	Phase Error	RMS < 5 degrees Peak < 20 degrees					
3	Frequency Error	< 0.1ppm					
4	Power Level	**GSM900/EGSM**					
		Level	Power	Toler.	Level	Power	Toler.
		5	33 dBm	$\pm$2dB	13	17 dBm	$\pm$3dB
		6	31 dBm	$\pm$3dB	14	15 dBm	$\pm$3dB
		7	29 dBm	$\pm$3dB	15	13 dBm	$\pm$3dB
		8	27 dBm	$\pm$3dB	16	11 dBm	$\pm$5dB
		9	25 dBm	$\pm$3dB	17	9 dBm	$\pm$5dB
		10	23 dBm	$\pm$3dB	18	7 dBm	$\pm$5dB
		11	21 dBm	$\pm$3dB	19	5 dBm	$\pm$5dB
		12	19 dBm	$\pm$3dB			
		DCS1800/PCS1900					
		Level	Power	Toler.	Level	Power	Toler.
		0	30 dBm	$\pm$2dB	8	14 dBm	$\pm$3dB
		1	28 dBm	$\pm$3dB	9	12 dBm	$\pm$4dB
		2	26 dBm	$\pm$3dB	10	10 dBm	$\pm$4dB
		3	24 dBm	$\pm$3dB	11	8 dBm	$\pm$4dB
		4	22 dBm	$\pm$3dB	12	6 dBm	$\pm$4dB
		5	20 dBm	$\pm$3dB	13	4 dBm	$\pm$4dB
		6	18 dBm	$\pm$3dB	14	2 dBm	$\pm$5dB
		7	16 dBm	$\pm$3dB	15	0 dBm	$\pm$5dB

Item	Description	Specification	
5	Output RF Spectrum (due to modulation)	**GSM900/EGSM**	
		Offset from Carrier (kHz).	Max. dBc
		100	+0.5
		200	-30
		250	-33
		400	-60
		600~ <1,200	-60
		1,200~ <1,800	-60
		1,800~ <3,000	-63
		3,000~ <6,000	-65
		6,000	-71
		DCS1800/PCS1900	
		Offset from Carrier (kHz).	Max. dBc
		100	+0.5
		200	-30
		250	-33
		400	-60
		600~ <1,200	-60
		1,200~ <1,800	-60
		1,800~ <3,000	-65
		3,000~ <6,000	-65
		6,000	-73
6	Output RF Spectrum (due to switching transient)	**GSM850**	
		Offset from Carrier (kHz)	Max. (dBm)
		400	-19
		600	-21
		1,200	-21
		1,800	-24

2. PERFORMANCE

Item	Description	Specification		
6	Output RF Spectrum (due to switching transient)	**DCS1800/PCS1900**		
		Offset from Carrier (kHz).	Max. (dBm)	
		400	-22	
		600	-24	
		1,200	-24	
		1,800	-27	
7	Spurious Emissions	Conduction, Emission Status		
8	Bit Error Ratio	**GSM850** BER (Class II) < 2.439% @-102dBm **DCS1800/PCS1900** BER (Class II) < 2.439% @-100dBm		
9	Rx Level Report accuracy	±3 dB		
10	SLR	8 ±3 dB		
11	Sending Response	Frequency (Hz)	Max.(dB)	Min.(dB)
		100	-12	-
		200	0	-
		300	0	-12
		1,000	0	-6
		2,000	4	-6
		3,000	4	-6
		3,400	4	-9
		4,000	0	-
12	RLR	2 ±3 dB		
13	Receiving Response	Frequency (Hz)	Max.(dB)	Min.(dB)
		100	-12	-
		200	0	-
		300	2	-7
		500	*	-5
		1,000	0	-5
		3,000	2	-5
		3,400	2	-10
		4,000	2	
		∗ Mean that Adopt a straight line in between 300 Hz and 1,000 Hz to be Max. level in the range.		

Item	Description	Specification	
14	STMR	13±5 dB	
15	Stability Margin	> 6 dB	
16	Distortion	dB to ARL (dB)	Level Ratio (dB)
		-35	17.5
		-30	22.5
		-20	30.7
		-10	33.3
		0	33.7
		7	31.7
		10	25.5
17	Side Tone Distortion	Three stage distortion < 10%	
18	<Change> System frequency (26 MHz) tolerance	≤ 2.5ppm	
19	<Change>32.768KHz tolerance	≤ 30ppm	
20	Power consumption	Standby - Normal ≤ 5.2mA(Max. power)	
21	Talk Time	GSM900/Lvl 7 (Battery Capacity 800mA):240 min GSM900/Lvl 12(Battery Capacity 800mA):420 min	
22	Standby Time	Under conditions, at least 300 hours: 1. Brand new and full 800mAh battery 2. Full charge, no receive/send and keep GSM in idle mode. 3. Broadcast set off. 4. Signal strength display set at 3 level above. 5. Backlight of phone set off.	
23	Ringer Volume	At least 65 dB under below conditions: 1. Ringer set as ringer. 2. Test distance set as 50 cm	
24	Charge Current	Fast Charge : < 450 mA Slow Charge: < 55mA	
25	Antenna Display	Antenna Bar Number	Power
		5	-85 dBm ~
		4	-90 dBm ~ -86 dBm
		3	-95 dBm ~ -91 dBm
		2	-100 dBm ~ -96 dBm
		1	-105 dBm ~ -101 dBm
		0	~ -105 dBm

2. PERFORMANCE

Item	Description	Specification	
26	Battery Indicator	Battery Bar Number	Voltage(±0.05V)
		4	3.86V~4.2V
		3	3.75V~3.85V
		2	3.75V~3.69V
		1	3.69V~3.62V
		0	3.62V~
27	Low Voltage Warning	3.58V↓ ±0.05V (Call)	
		3.50V↓ ±0.05V (Standby)	
28	Forced shut down Voltage	3.4± 0.05 V	
29	Battery Type	Li-ion Battery Standard Voltage = 3.7 V Battery full charge voltage = 4.2 V Capacity: 800mAh	
30	Travel Charger	Switching-mode charger Input: 100 ~ 240 V, 50/60Hz Out put: 4.8V , 0.9A	

* EDGE RF Specification (Option: KG99 is not serviced for "EDGE mode")

Item	Description	Specification					
1	RMS EVM	$\leq$ 9%					
2	Peak EVM	$\leq$ 30%					
3	95th Percentile EVM	$\leq$ 15%					
4	Origin Offset Suppression	$\geq$ 30dB					
5	Power Level	**EGSM**					
		Level	Power	Toler.	Level	Power	Toler.
		5	27dBm	$\pm$3dB	13	17dBm	$\pm$3dB
		6	27dBm	$\pm$3dB	14	15dBm	$\pm$3dB
		7	27dBm	$\pm$3dB	15	13dBm	$\pm$3dB
		8	27dBm	$\pm$3dB	16	11dBm	$\pm$5dB
		9	25dBm	$\pm$3dB	17	9dBm	$\pm$5dB
		10	23dBm	$\pm$3dB	18	7dBm	$\pm$5dB
		11	21dBm	$\pm$3dB	19	5dBm	$\pm$5dB
		12	19dBm	$\pm$3dB			
		DCS1800, PCS1900					
		Level	Power	Toler.	Level	Power	Toler.
		0	26dBm	$\pm$3dB	8	14 dBm	$\pm$3dB
		1	26dBm	$\pm$3dB	9	12 dBm	$\pm$4dB
		2	26dBm	$\pm$3dB	10	10 dBm	$\pm$4dB
		3	24 dBm	$\pm$3dB	11	8 dBm	$\pm$4dB
		4	22 dBm	$\pm$3dB	12	6 dBm	$\pm$4dB
		5	20 dBm	$\pm$3dB	13	4 dBm	$\pm$4dB
		6	18 dBm	$\pm$3dB	14	2 dBm	$\pm$5dB
		7	16 dBm	$\pm$3dB	15	0 dBm	$\pm$5dB
6	Output RF Spectrum (due to modulation)	**EGSM**					
		Offset from carrier(kHz)			Max. dBc		
		100			+0.5		
		200			-30		
		250			-33		
		400			-54		
		600~<1,200			-60		
		1,200~<1,800			-60		
		1,800~<3,000			-63		
		3,000~<6,000			-65		
		6,000			-71		

2. PERFORMANCE

Item	Description	Specification		
6	Output RF Spectrum (due to modulation)	**DCS1800, PCS1900**		
		Offset from carrier(kHz)		Max. dBc
		100		+0.5
		200		-30
		250		-33
		400		-54
		600~<1,200		-60
		1,200~<1,800		-60
		1,800~<3,000		-63
		3,000~<6,000		-65
		6,000		-71
7	Output RF Spectrum (due to switching transient)	**EGSM**		
		Offset from carrier(kHz)		Max. dBm
		400		-23
		600		-26
		1,200		-27
		1,800		--30
		DCS1800, PCS1900		
		Offset from carrier(kHz)		Max. dBm
		400		-23
		600		-26
		1,200		-27
		1,800		-30

3. TECHNICAL BRIEF

Baseband circuit

3.1 KE770 Component Block diagram.
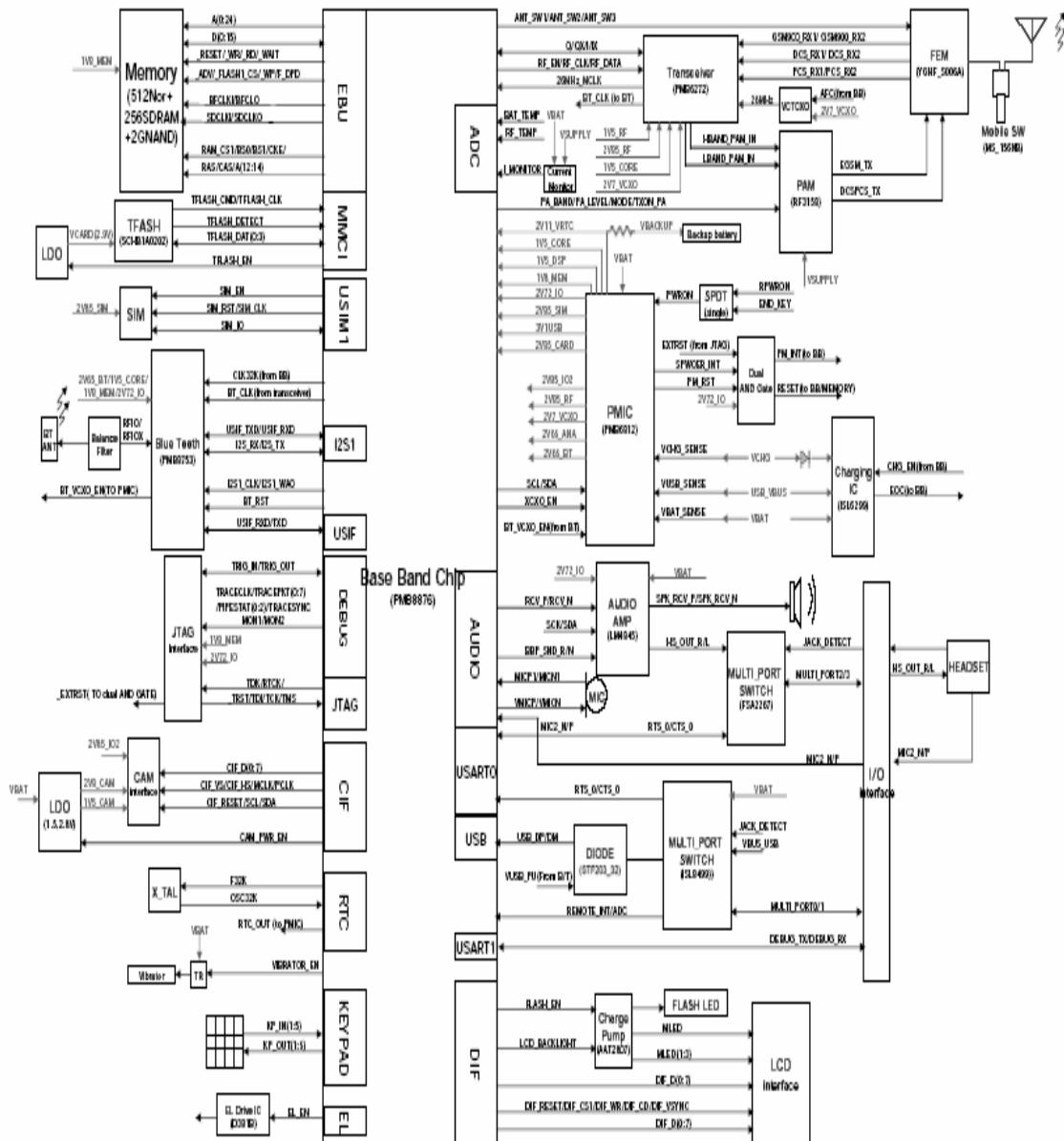
**Figure 1 KE770 Functional block diagram**

3.2 Baseband Processor (BBP) Introduction
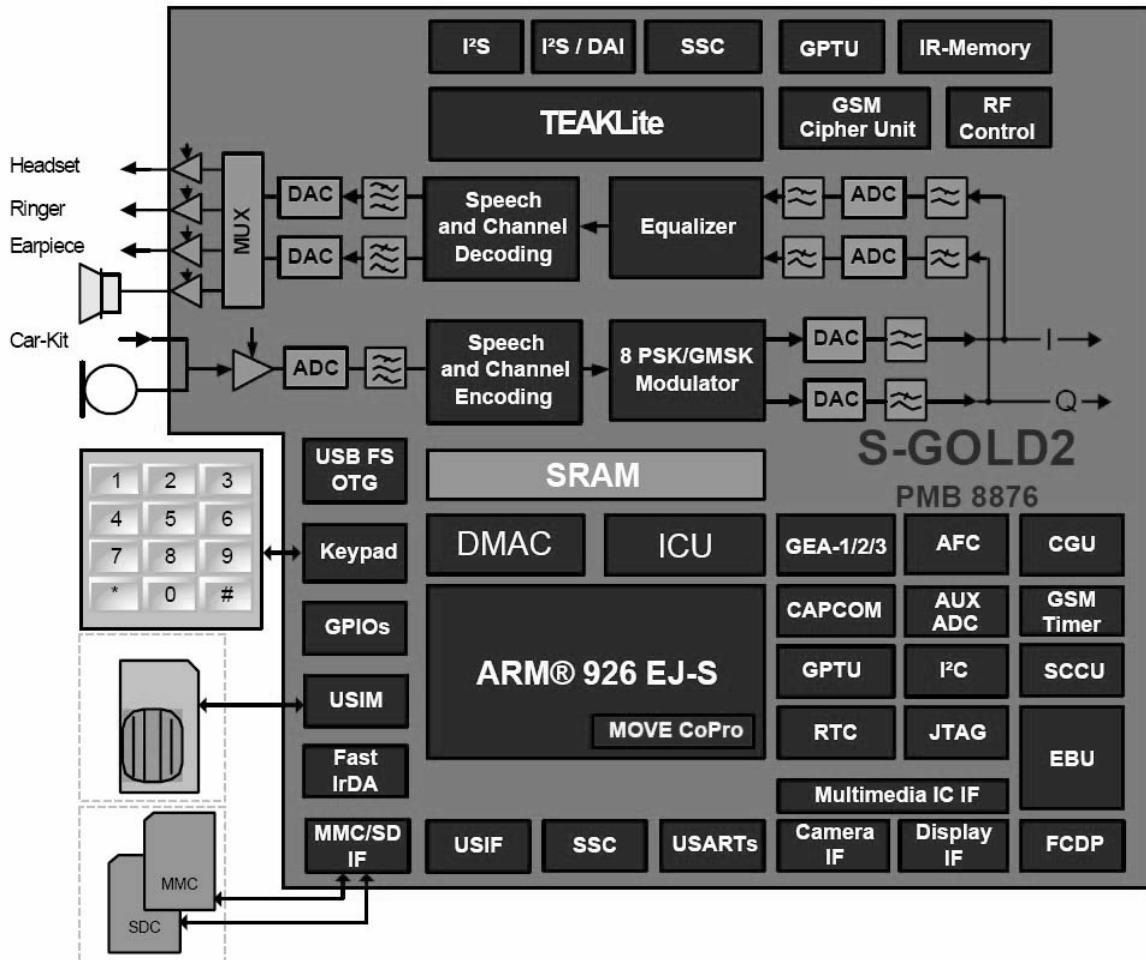
Figure 2. Top level block diagram of the S-GOLD2™ (PMB8876)

3.2.1 General Description

S-GOLD2™ is a GSM/EDGE single chip mixed signal Baseband IC containing all analog and digital functionality of a cellular radio. Additionally S-GOLD2™ Provides multimedia extensions such as camera, software MIDI, MP3 sound. It is designed as a single chip solution, integrating the digital and mixed signal portions of the base band in 0.13um, 1.5V technology.

The chip will fully support the FR, EFR, HR and AMR-NB vocoding.

S-GOLD2™ support multi-slot operation modes HSCSD (up to class 10), GPRS for high speed data application (up to class 12) and EGPRS (up to class 12) without additional external hardware.

3.2.2 Block Description

- Processing core
  ARM926EJ-S 32 bit processor core for controller functions. The ARM926EJ-S includes an MMU, and the Jazelle Java extension for Java acceleration.
  - TEAKLite DSP core

- ARM-Memory
  - 32k Byte Boot ROM on the AHB
  - 96k Byte SRAM on the AHB, flexibly usable as program or data RAM
  - 16k Byte Cache for Program (internal)
  - 8k Byte tightly coupled memory for Program(internal)
  - 8k Byte Cache for Data(internal)
  - 8k Byte tightly coupled memory for Data(internal)

- DSP-Memory
  - 104K x 16bit Program ROM
  - 8k x 16bit Program RAM
  - 60k x 16bit Data ROM
  - 37k x 16bit Data RAM
  - Incremental Redundancy(IR) Memory of 35904 words of 16bit

- Shared Memory Block
  1.5K x 32bit Shared RAM(dual ported) between controller system and TEAKLite.

- Controller Bus system
  The processor cores and their peripherals are connected by powerful buses. Multi-layer AHB for connecting the ARM and the other master capable building blocks with the internal and external memories and with the peripheral buses.

- Clock system
  The clock system allows widely independent selection of frequencies for the essential parts of the S-GOLD2. Thus power consumption and performance can be optimized for each application.

- Functional Hardware block
  - CPU and DSP Timers
  - MOVE coprocessor performing motion estimation for video encoding algorithms
    (H.263, MPEG-4)
  - Programmable PLL with additional phase shifters for system clock generation
  - GSM Timer Module that off-loads the CPU from radio channel timing
  - GMSK / 8-PSK Modulator according to GSM-standard 05.04 (5/2000)
  - GMSK Modulator: gauss-filter with B*T=0.3
  - EDGE Modulator: 8PSK-modulation with linearized GMSK-Pulse-Filter
  - Hardware accelerators for equalizer and channel decoding.
  - Incremental Redundancy memory for EDGE class 12 support
  - A5/1, A5/2, A5/3 Cipher unit
  - GEA1, GEA2, GEA3 Cipher Unit to support GPRS data transmission

3. TECHNICAL BRIEF

- Advanced static and dynamic power management features including TDMA-Frame synchronous low power mode and enhanced CPU modes(idle and sleep modes)
- Pulse Number Modulation output for Automatic Frequency Correction(AFC)
- Serial RF Control interface: support of direct conversion RF
- A Universal Serial Interface(USIF) enabling asynchronous (UART) of synchronous (SPI) serial data transmission
- 1 Serial Synchronous SPI compatible interfaces in the controller domain
- 1 Serial Synchronous SPI compatible interface in the TEAKLite domain
- 2 USART with autobaud detection, hardware flow control and integrated IrDA controller supporting IrDA's SIR standard (up to 115.2Kbps)
- A dedicated Fas IfDA Controller supporting IrDA's SIR,MIR and FIR standards (up to 4Mbps)
- I2C-bus interface (e.g. connection to S/M power)
- A fast display interface supporting serial and parallel interconnection
- An ITU-R BT.656 compatible Camera interface.
- Programmable clock output for a camera
- An multimedia/Secure Digital Card Interface (MMCI/SD:SDIO capable)

3.2.3. External Devices connected to memory interface

Table 1 Memory interface

Device	Name	Maker	Remark
FLASH	PF38F5060M0Y0B0	Intel	Synchronous / A synchronous
SDRAM	PF38F5060M0Y0B0	Intel	Synchronous 104MHz
LCD	IL176CBN6A	LGinnotek	,176*220 (,34*45*1.8 ,262k ,TFT
Melody IC	Not Used	S/W	Infineon Software CODEC

3.2.4. RF Interface (T_OUT)

S-Gold2 uses this interface to control RF IC and Peripherals. 13 signals are provided switch on/off RF ICs Periodically each TDMA frame.

Table 2 RF Interface Spec.

T_OUT		
Resource	Interconnection	Description
T_OUT0	TXON_PA	PAM Power on
T_OUT1	Other function	-
T_OUT2	PA_BAND	TX RF band select
T_OUT3	ANT_SW1	FEM control
T_OUT4	ANT_SW2	FEM control
T_OUT5	ANT_SW3	FEM control
T_OUT6	MODE	PAM Mode select

3.2.5. USART Interface

KE770 have two UART Drivers as follow :
- USART1 : Hardware Flow Control / SW upgrade / Calibration
- USART2 : SW debug trace.

Table 3 USART Interface Spec.

USART_0(USART1)		
Resource	Name	Remark
USART0_TXD	TXD_0	Transmit Data
USART0_RXD	RXD_0	Receive Data
USART0_CTS	CTS_0	Clear To Send
USART0_RTS	RTS_0	Request To Send
	DSR	N.C.
USART_1(USART2)		
USART1_TXD	TX_DEBUG	Trace data tx
USART1_RXD	RX_DEBUG	Trace data rx
USART1_CTS	N.C.	N.C.
USART1_RTS	N.C.	N.C.

3.2.6. ADC channel

BBP ADC block is composed of 7 external ADC channel. This block operates charging process and other related process by reading battery voltage and other analog values.

Table 4 S-Gold2 ADC channel usage

ADC channel		
Resource	Interconnection	Description
M0	BATT_TEMP	Battery temperature measure
M1	RF_TEMP	RF block temperature measure
M2	JACK_TYPE	Accessory type detect
M7	H/W VERSION	S-Gold2 H/W version detect
M8	VSUPPLY	Battery supply voltage measure
M9	I_MONITOR	Current consumption measure
M10	REMOTE_ADC	Remote control key detect

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3.2.7. GPIO map

Over a hundred allowable resources, KE770is using as follows except dedicated to SIM and Memory. KE770GPIO(General Purpose Input/Output) Map, describing application, I/O state, and enable level, is shown in below table.

Table 5 S-Gold2 GPIO pin Map

Port function	ME820 Net Name	Description
KEY MATRIX		
KP_IN0	KP_IN0	Refer to Key Matrix
KP_IN1	KP_IN1	Refer to Key Matrix
KP_IN2	KP_IN2	Refer to Key Matrix
KP_IN3	KP_IN3	Refer to Key Matrix
KP_IN4	KP_IN4	Refer to Key Matrix
KP_IN5	KP_IN5	Refer to Key Matrix
KP_IN6	KP_OUT5	Refer to Key Matrix
KP_OUT0	KP_OUT0	Refer to Key Matrix
KP_OUT1	KP_OUT1	Refer to Key Matrix
KP_OUT2	KP_OUT2	Refer to Key Matrix
KP_OUT3	KP_OUT3	Refer to Key Matrix
USART_0		
USART0_RXD	RXD_0	UARTO, RS232 Data
USART0_TXD	TXD_0	UARTO, RS232 Data
USART0_RTS_N	CTS_0	UARTO, RS232 RTS
USART0_CTS_N	RTS_0	UARTO, RS232 CTS
USART_1		
USART1_RXD	TX_DEBUG	For debugging
USART1_TXD	RX_DEBUG	For debugging
USART1_RTS_N	Not Use	
USART1_CTS_N	Not Use	
USB		
USB_DPLUS	USB_DP	USB data
USB_DMINUS	USB_DM	USB data

MEMORY &CLK		
GPIO_20	F_DPD	For INTEL Memory
CLK32K	CLK32K	For FM Radio & BLUETOOTH
GPIO_22	Not Use	
CAMERA I/F		
CIF_D0	CIF_D(0)	Camera DATA[0]
CIF_D1	CIF_D(1)	Camera DATA[1]
CIF_D2	CIF_D(2)	Camera DATA[2]
CIF_D3	CIF_D(3)	Camera DATA[3]
CIF_D4	CIF_D(4)	Camera DATA[4]
CIF_D5	CIF_D(5)	Camera DATA[5]
CIF_D6	CIF_D(6)	Camera DATA[6]
CIF_D7	CIF_D(7)	Camera DATA[7]
CIF_PCLK	CIF_PCLK	Camera pixel clock
CIF_HSYNC	CIF_HS	Camera H sync
CIF_VSYNC	CIF_VS	Camera V sync
CLKOUT	CIF_MCLK	Camera main clock
CIF_PD	CIF_PD	Camera power down(active high)
CIF_RESET	CIF_RESET	Camera reset
LCD IF/		
DIF_D0	DIF_D(0)	LCD data[0]
DIF_D1	DIF_D(1)	LCD data[1]
DIF_D2	DIF_D(2)	LCD data[2]
DIF_D3	DIF_D(3)	LCD data[3]
DIF_D4	DIF_D(4)	LCD data[4]
DIF_D5	DIF_D(5)	LCD data[5]
DIF_D6	DIF_D(6)	LCD data[6]
DIF_D7	DIF_D(7)	LCD data[7]
DIF_CS1	DIF_CS	LCD chip select
GPIO_96		
DIF_CD	DIF_CD	Command Data switch
DIF_WR	MM_WR	LCD Write
DIF_RD	MM_RD	LCD Read

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GPIO_99		
GPIO_100	TFLASH_EN	TransFlash card power enable(active High)
DIF_RESET1_GPIO	DIF_RESET1	LCD Reset
EINT6	REMOTE_INT	For Remote Control Headset
I2c		
I2C_SCL	SCL	For SM-Power, FM Radio, Audio AMP
I2C_SDA	SDA	"
PM_INT (EINT)	PM_INT	SM-Power interrupt
SIM CARD		
CC_IO	SIM_IO	SIM CARD I/O
CC_CLK	SIM_CLK	SIM CARD CLOCK
CC_RST	SIM_RST	SIM CARD RESET
I2S		
I2S2_CLK0	I2S2_CLK	
GPIO_102	_WP	
I2S2_RX	Not Use	
I2S2_TX	Not Use	
I2S2_WA0	Not Use	
I2S2_WA1	Not Use	
EXTERNAL MEMORY		
MMCI_CMD	TF_CMD	For T-Flash
MMCI_DAT[0]	TF_DAT0	"
MMCI_CLK	TF_CLK	"
BT I/F		
USIF_TXD_MTSR	USIF_TXD	For Bluetooth
USIF_RXD_MRST	USIF_RXD	"
GPIO_109	_USB_EOC	USB End of charging detect(High: EOC, Low: charging)
GPIO_110	RPWRON	Remote power on detect (High: Remote , Low: Normal
GPIO_111	SPK_RCV_SEL	Audio pass select(high: Speaker, Low: Receiver)
I2S		
I2S1_CLK0	I2S1_CLK	For Bluetooth
GPTU0_0	FLASH_EN	For Camera Flash LED

I2S1_RX	I2S1_RX	For Bluetooth
I2S1_TX	I2S1_TX	"
I2S1_WA0	I2S1_WA0	"
MMC		
MMCI_DAT[1]	TF_DAT1	For T-Flash
MMCI_DAT[2]	TF_DAT2	"
MMCI_DAT[3]	TF_DAT3	"
AUDIO I/F		
EPN1	RCV_N	For Receiver
EPP1	RCV_P	"
EPPA1	BBP_SND_L	For Speaker
EPPA2	BBP_SND_R	For Speaker
MICN1	MIC1_N	For Mic
MICP1	MIC1_P	"
MICN2	MIC2_N	For Headset Mic
MICP2	MIC2_P	"
VMICP	VMICP	For Mic
VMICN	VMICN	"
ADC		
M_0	BAT_TEMP	Battery temperature detect
M_1	RF_TEMP	RF Power amp reference temperature detect
M_2	JACK_TYPE	For 18Pin Cable Type Detect
M_7		HW revision indication
M_8		Battery voltage measurement
M_9	I_MONITOR	Current consumption measurement
M_10	REMOTE_ADC	For Remote Control Headset Key detect with REMOTE_INT
JTAG		
TDO	TDO	For JTAG & ETM Interface
TDI	TDI	"
TMS	TMS	"
TCK	TCK	"
TRST_n	TRSTn	"
RTCK	RTCK	"

3. TECHNICAL BRIEF

- 28 -

ETM		
TRIG_IN	TRIG_IN	"
MON1	MON1	"
MON2	MON2	"
TRACESYNC	TRACESYNC	"
TRACECLK	TRACECLK	"
PIPESTAT[2]	PIPESTAT[2]	"
PIPESTAT[1]	PIPESTAT[1]	"
PIPESTAT[0]	PIPESTAT[0]	"
TRACEPKT[0]	TRACEPKT[0]	"
TRACEPKT[1]	TRACEPKT[1]	"
TRACEPKT[2]	TRACEPKT[2]	"
TRACEPKT[3]	TRACEPKT[3]	"
TRACEPKT[4]	TRACEPKT[4]	"
TRACEPKT[5]	TRACEPKT[5]	"
TRACEPKT[6]	TRACEPKT[6]	"
TRACEPKT[7]	TRACEPKT[7]	"
Data bus		
EBU_AD[0]	D(0)	Data bus[0]
EBU_AD[1]	D(1)	Data bus[1]
EBU_AD[2]	D(2)	Data bus[2]
EBU_AD[3]	D(3)	Data bus[3]
EBU_AD[4]	D(4)	Data bus[4]
EBU_AD[5]	D(5)	Data bus[5]
EBU_AD[6]	D(6)	Data bus[6]
EBU_AD[7]	D(7)	Data bus[7]
EBU_AD[8]	D(8)	Data bus[8]
EBU_AD[9]	D(9)	Data bus[9]
EBU_AD[10]	D(10)	Data bus[10]
EBU_AD[11]	D(11)	Data bus[11]
EBU_AD[12]	D(12)	Data bus[12]
EBU_AD[13]	D(13)	Data bus[13]
EBU_AD[14]	D(14)	Data bus[14]
EBU_AD[15]	D(15)	Data bus[15]
EBU_WR_n	_WR	Write strobe

EBU_RD_n	_RD	Read strobe
EBU_BC0_n	_BC0	
EBU_BC1_n	_BC1	
EBU_A[0]	A(0)	Address bus[0]
EBU_A[1]	A(1)	Address bus[1]
EBU_A[2]	A(2)	Address bus[2]
EBU_A[3]	A(3)	Address bus[3]
EBU_A[4]	A(4)	Address bus[4]
EBU_A[5]	A(5)	Address bus[5]
EBU_A[6]	A(6)	Address bus[6]
EBU_A[7]	A(7)	Address bus[7]
EBU_A[8]	A(8)	Address bus[8]
EBU_A[9]	A(9)	Address bus[9]
EBU_A[10]	A(10)	Address bus[10]
EBU_A[11]	A(11)	Address bus[11]
EBU_A[12]	A(12)	Address bus[12]
EBU_A[13]	A(13)	Address bus[13]
EBU_A[14]	A(14)	Address bus[14]
EBU_A[15]	A(15)	Address bus[15]
EBU_A[16]	A(16)	Address bus[16]
EBU_A[17]	A(17)	Address bus[17]
EBU_A[18]	A(18)	Address bus[18]
EBU_A[19]	A(19)	Address bus[19]
EBU_A[20]	A(20)	Address bus[20]
EBU_A[21]	A(21)	Address bus[21]
EBU_A[22]	A(22)	Address bus[22]
EBU_A[23]	A(23)	Address bus[23]
EBU_A[24]	A(24)	Address bus[24]
EBU_CS0_n	_FLASH1_CS	Flash ROM chip select
EBU_CS1_n	_RAM_CS	SDRAM Chip select
EBU_CS2_n	_FLASH2_CS	Not used
EBU_CS3_n	_CS3	Not used
EBU_ADV_n	_ADV	
EBU_RAS_n	_RAS	
EBU_CAS_n	_CAS	

EBU_WAIT_n	_WAIT	
EBU_SDCLKO	SDCLKO	
EBU_SDCLKI	SDCLKI	
EBU_BFCLKO	BFCLKO	
EBU_BFCLKI	BFCLKI	
EBU_CKE	CKE	
SSC1_SCLK	F_DPD	
T_OUT0	TXON_PA	RF Power amp turn on
GPIO_44	VIBRATOR_EN	Vibrator enable(High: enable, Low:disable)
T_OUT2	PA_BAND	RF band select
T_OUT3	ANT_SW1	RF FEM control signal 1
T_OUT4	ANT_SW2	RF FEM control signal 2
EINT3	ANT_SW3	RF FEM control signal 3
T_OUT6	MODE	For RF
GPIO_50	KP_OUT(4)	Key pad
GPIO_51	AU_PWR_EN	Audio amp power enable(active high)
CC1CC3IO	LCD BACKLIGHT	LCD Backlight Control
GPIO_53	JACK_DETECT	For Headset Detect(High: unplugged, Low: plugged)
GPIO_54	_FM_RESET	FM Radio chip reset
GPIO_55	AF_PWR_EN	Auto focus power enable(active high)
RF_STR0	EN	RF Transceiver chip enable
GPIO_57	TF_DETECT	Micro SD card detect (High: inserted, Low: ejected)
RF_DATA	DA	RF Transceiver chip data
RF_CLK	CLK	RF Transceiver chip clock
System port		
AFC	AFC	Automatic Frequency control DAC output for 26MHz VCTCXO
CLKOUT0 [<=26MHz]	Not Use	
F26M	26MHZ_MCLK	Baseband processor PLL input Main clock

F32K		Sleep crystal 32.768KHz
OSC32K		Sleep crystal 32.768KHz
RESET_n	_RESET	Baseband processor reset
CC1CC1IO	TRIG_OUT	For JTAG & ETM Interface
RTC_OUT	RTC_OUT	Wake up signal to alarm (High; wake up, Low: Power off)
VCXO_EN	VCXO_EN	26MHz clock enable
DSP		
DSPIN0	_BT_RESET	Bluetooth chip reset
GPIO_62	Not Use	
GPIO_63	_SIM_EN	SIM card power enable

3. TECHNICAL BRIEF

3.3. Power management IC

3.3.1. General Description

SM-POWER is a highly integrated Power and Battery Management IC for mobile handsets. It has been specially designed for usage with S-Gold2. Although optimized for usage with the Infineon S-GOLD baseband device it is suitable for the S-GOLDlite and the E-GOLD+ baseband devices as well. It also supports the cellular RF devices like SMARTi-DC, SMARTi-DC+, SMARTi-SD and the Bluemoon Single, Infineon's single chip solution for Bluetooth. If used with S-GOLD2 it provides all power supply functions (except for the RF PA) for a complete advanced GSM Edge smart phone minimizing external device count.

Block Description
- Highly efficient step-down converter for main digital baseband supply including Core, DSP and memory interface (External Bus Unit).
- Support of S-GOLD standby power-down concept
- Low-drop-out (LDO) regulators for Flash and mobile RAM memory devices
- Voltage independent switching of two SIM cards
- LDO regulators for baseband I/O supply
- LDO regulator for analog mixed-signal section of S-GOLD
- Low-noise LDO regulators for RF devices
- Supply for Bluemoon Single, Infineon's single chip solution for Bluetooth
- Audio amplifier 8 Ohms for handsfree operation and ringing
- Charge Control for charging Li-Ion/Polymer batteries under software control
- Pre-charge current generator with selectable current level
- RTC regulator with ultra-low quiescent current
- USB interface support for peripheral and mini-host mode
- Backlight LEDs driver with current selection and PWM dimming function
- Two single LED driver outputs for signaling
- Vibrator driver with adjustable voltage
- Fully controlable by software via I2C - Bus
- Temperature and battery voltage sensors
- Interrupt channels for peripherals
- System debug mode
- VQFN 48 package with heat sink and non-protruding leads
- Compatible with the Infineon E-GOLD+ V2 and V3
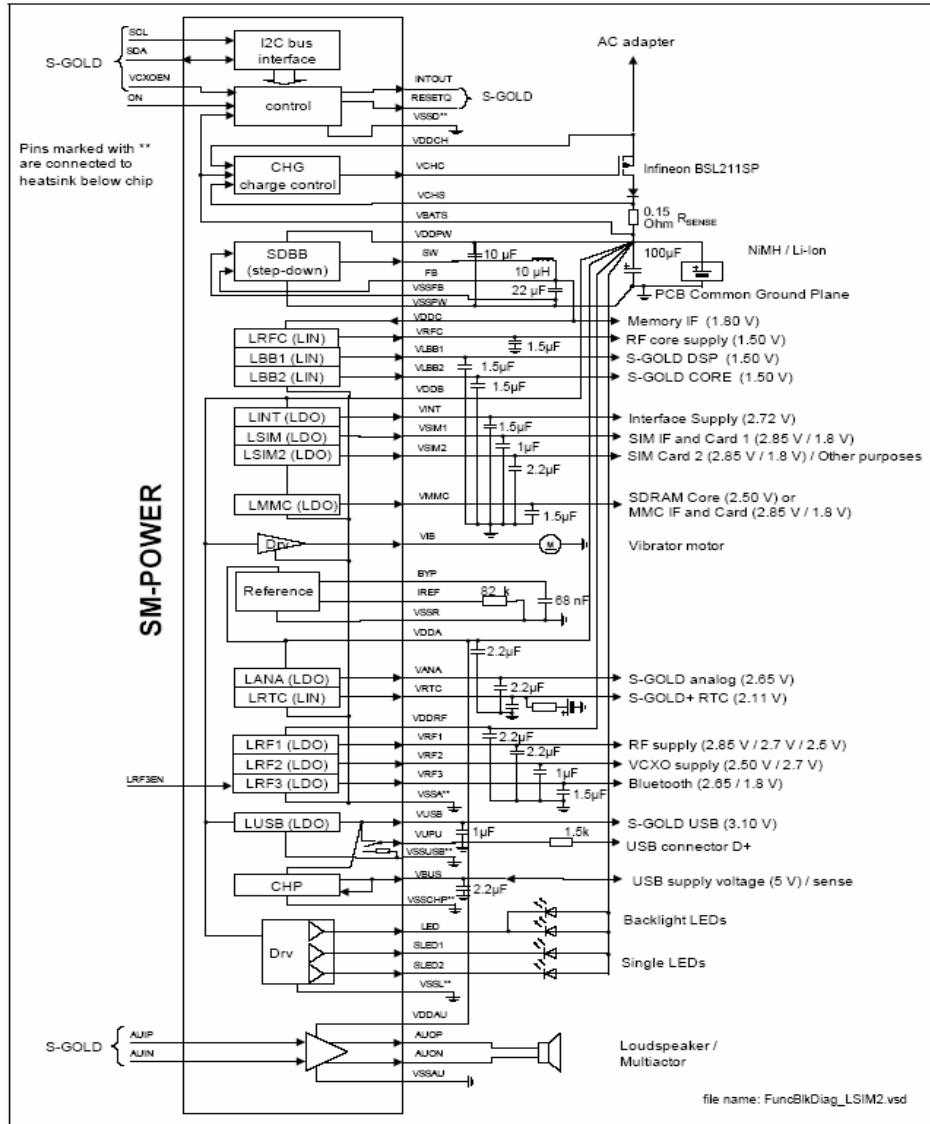
Figure 3 Top level block diagram of the SM-Power(PMB6812)

SM-POWER is a further step on the successful E-Power product line with enhanced and optimized functionality. SM-POWER features a baseband supply concept with a DC/DC step-down converter (SDBB) cascaded by two linear regulators (LBB1/2)

- SM-POWER's DC/DC converter makes up to 40 % reduction of battery current for smart phone functions (e.g. organizer functions, games, MP3 decoding) possible.
- SDBB has high efficiency up to 95% and also a power save mode.
- Memory Interface is directly supported by the SDBB
- SDBB can also act as main supply voltage for E-GOLD+ or S-GOLDlite baseband devices.
- For S-GOLD two linear regulators for DSP and Core are cascaded after the SDBB.

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SM-POWER supports the standby power-down concept of S-GOLD by temporarily switching off the linear regulator LBB1 for the DSP during mobile standby whenever this subsystem is not used. In this phase the ARM controller and most peripherals including parts of the on-chip SRAM are kept powered-up with power being supplied by the other linear regulator LBB2.

SM-POWER includes a fully differential audio amplifier able to drive loads down to a nominal value of 8 Ohm for usage in hands-free phones and for ringing
- 400 mW maximum output power
- adjustable gain
- mute switch
- click and pop - protection

SM-POWER also integrates a charging function for Li-Ion, Li-Polymer batteries
- Pre-charge current source with two current levels
- Constant current / constant voltage charging with 3 different termination voltages
- Programmable charge current limitation for use with different batteries
- Freely programmable pulse charging to reduce the thermal power dissipation in the constant voltage charging phase
- Top-off charge current sensing

SM-POWER completes the USB interface of S-GOLD
- Regulated voltage for S-GOLD USB interface including reverse current and over-voltage protection
- Switch to supply USB pull-up resistor
- Mini-host pull down resistor functionality
- Charge pump with internal switching capacitor for USB host VBUS supply voltage

SM-POWER fully supports LED and Vibra Motor functionality
- no external components needed
- driver for backlight LEDs adjustable in steps up to 140mA and with soft turn on and off by PWM dimming
- two driver outputs for single LEDs for pre-charge indication and signaling with i.e. change of color
-driver for Vibrator Motor with adjustable voltages, soft startup / shutdown and current limitation

SM-POWER offers several control functions
- Power-on Reset Generator with logic state machine
- I2C bus interface
- I2C bus configurable mode control logic with ON (push-button or RTC), VCXOEN and LRF3EN (wake-up by Bluetooth) inputs
- Programmable interrupt channels to handle peripherals like SIM, MMC and USB
- Monitoring of charging functions
- Under-voltage Shut-Down
- Error flags (volatile or non-volatile) from many power-supply functions and thermal sensor in order to debug system
- Over--temperature Shut-Down
- Over-temperature Warning
- Support of S-GOLD standby power-down concept
- Support of S-GOLD Power-Down Pad Tristate Function

Table 6 LDO Output Table of SM-Power

LDO	Net name	Output Voltage	Output Current	Usage
SDBB	1V8_MEM	1.8V	850mA	Memory & for LDO
LRFC	1V5_RF	1.5V	120mA	RF transceiver
LBB1	1V5_DSP	1.5V	170mA	DSP in BBP
LBB2	1V5_CORE	1.5V	300mA	ARM core in BBP
LINT	2V72_IO	2.72V	135mA	Peripherals
LSIM	2V85_SIM	2.85V	22mA	SIM card
LSIM2	2V85_IO2	2.85V	200mA	Peripherals
LMMC	2V85_CARD	2.85V	135mA	SD card
LANA	2V65_ANA	2.65V	220mA	Analog block in BBP
LRTC	2V11_RTC	2.11V	0.3mA	RTC block & Backup battery
LRF1	2V85_RF	2.85V	250mA	RF IC
LRF2	2V7_RF	2.7V	10mA	RF IC
LRF3	2V65_BT	2.65V	150mA	BT IC(Blue moon
LUSB	3V1_USB	3.1V	45mA	USB I/F
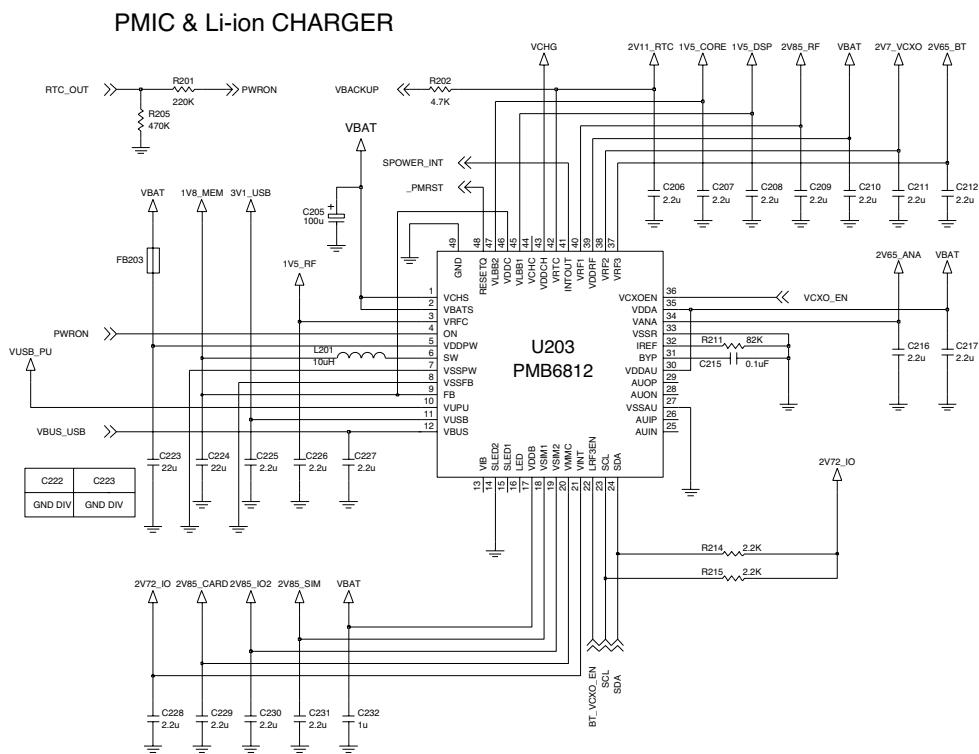
Figure 5 SM-Power circuit diagram

3. TECHNICAL BRIEF

3.3.2. Charging

The ISL6299 is a fully integrated low-cost single-cell Li-ion or Li-polymer battery charger. The charger accepts two power inputs, normally one from a USB (Universal Serial Bus) port and the other from a desktop cradle. The ISL6299 is an ideal charger for smart handheld devices that need to communicate with a personal computer via USB. The ISL6299 features 28V and 7V maximum voltages for the cradle and the USB inputs respectively. Due to the 28V rating for the cradle input, low-cost, large output tolerance adapters can be used safely. When both inputs are powered, the cradle input is used to charge the battery. The charge current is programmable for the cradle input with a small resistor. The end-of-charge current for the cradle input is also programmable by another external resistor. The charger incorporates Thermaguard™ which protects the IC against over temperature. If the die temperature rises above a typical value of 100°C, a thermal foldback function reduces the charge current automatically to prevent further temperature rise. The charger preconditions the battery with low current when the battery voltage is below 2.6V. The charger has two indication pins. The PPR (power present) pin outputs an open-drain logic LOW when either the cradle or the USB input power is attached. The CHG (charge) pin is also an open-drain output that indicates a logic LOW when the charge current is above a minimum current level. When the charge current is below the minimum current, the CHG pin indicates a logic HIGH signal and the status is latched. The latch will be reset at one of these events: (1) the part is disabled and re-enabled; (2) the selected input source has been removed and re-applied, (3) The USBON turns LOW, or (4) The BAT pin voltage falls below the CV mode threshold.
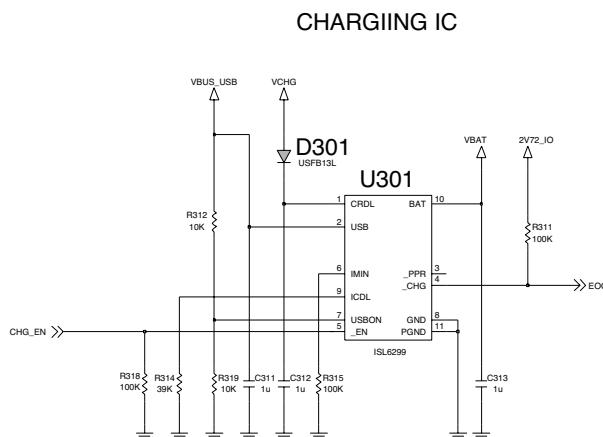
CHARGIING IC

Figure 7 Charging IC Circutit

| 4.2V~3.86V | 3.85V~3.75V | 3.74V~3.70V | 3.69V~3.57V |
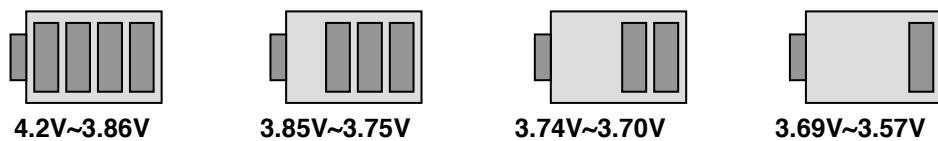
**Figure 6 Battery Block Indication**

1. Charging method : CC-CV
2. Charger detect voltage : 4.0V
3. Charging time : 3h
4. Charging current : 500mA
5. CV voltage : 4.2V
6. Cutoff current : 100mA
7. Full charge indication current (icon stop current) : 100mA
8. Recharge voltage : 4.00V
9. Low battery alarm
    a. Idle : 3.50V~3.35V
    b. Dedicated : 3.56V~3.35V
10. Low battery alarm interval
    a. Idle : 3min
    b. Dedicated:1min
11. Switch-off voltage : 3.35V
12. Charging temperature adc range
    a. ~ -5°C : low charging voltage operation (3.6V ~ 3.9V).
    b. -5°C ~ 50°C : standard charging (up to 4.2 V)
    c. 50°C ~ : low charging voltage operation (3.6V ~ 3.9V)

## 3.4. Power ON/OFF

KE770Power State : Defined 3cases as follow
▶ Power-ON : Power key detect (SM-Power's ON port
▶ Power-ON-charging : Charger detect.
▶ Power-ON-remote : remote power on detect (Factory use only)
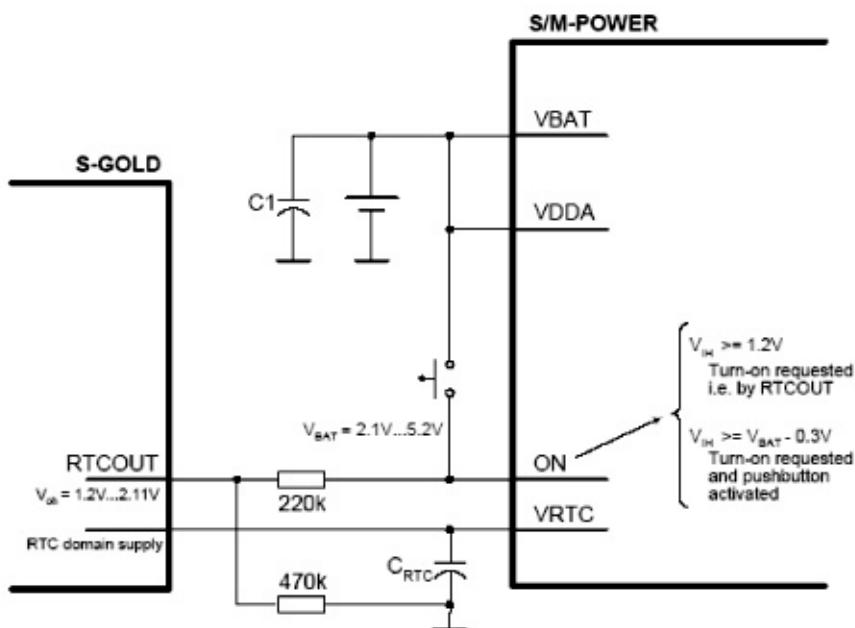
Figure 7 Power on application.

Input ON is a power-on input for SM-POWER with 2 active high levels (see Figure 8). It might be triggered by a push button or by the RTCOUT output of the S-GOLD device as well. To detect if the push-button is pressed during system operation the logical level at pin ON or its change (if Bit 1 EION in INTCTRL2 is asserted) is recorded in bit LON of the ISF register. If the high level of voltage at pin ON does not reach V_{IHdet} (Vbat-0.8 ~ Vbat-0.3) the above-mentioned bit won't be set.

To support Remote power on function for factory mass production, applied an analog switch as following figure. As monitoring the RPWRON(GPIO_110) and Key matrix KP_OUT(1) & KP_IN(5), KE770system recognize whether remote power on or End-key pushed

POWER ON
(REMOTE / END_KEY)

D201

RPWRON R218 0
END_KEY R220 0
R219 0 PWRON
KDR331V
C233 1000p
R222 100K

END KEY

VBAT

CN202

KP_IN(5)

Q201
2SC5585

R223 10K END_KEY

END_KEY

R225 NA

KP_OUT(1)

R224 100K
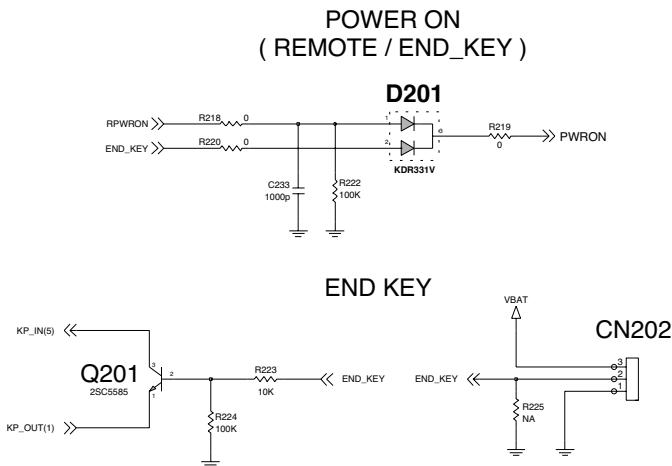
Figure8 Remote power on and End-key power on circuit

3.5. SIM interface

KE770 supports 3V plug in SIM, SIM interface scheme is shown in (Figure 9).
SIM_IO, SIM_CLK, SIM_RST ports are used to communicate with BBP(S-Gold2) and the SIM power supply enabled by BBP (_SIM_EN).

SIM Interface
    SIM_CLK : SIM card reference clock
    SIM_RST : SIM card Async /sync reset
    SIM_IO : SIM card bidirectional reset

2V85_SIM

_SIM_EN

Q500
SI1305-E3

CN500

R507 10K
R505 NA

4	C5	C1	1
5	C6	C2	2
6	C7	C3	3
10	GND4	GND1	7
9	GND3	GND2	8

SIM_RST
SIM_CLK

SIM_IO

C510 NA

C535 NA

C512 0.1u
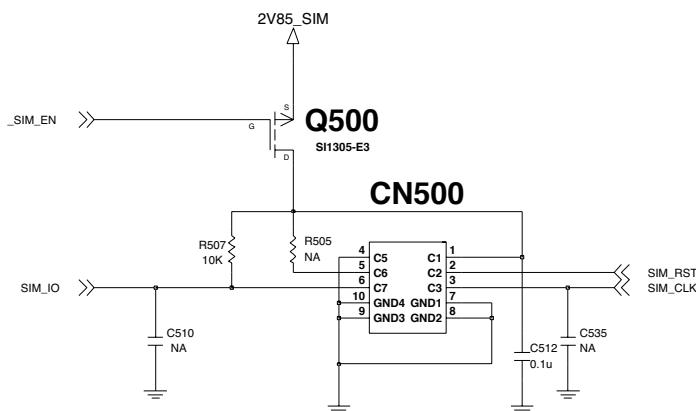
Figure 9 SIM CARD Interface

3.6. Memory

1Gbit Flash & 256Mbit SDRAM employed on KE770with 16 bit parallel data bus thru ADD(0) ~ ADD(24). The 256Mbit Capulet Wireless Flash memory with LPSDRAM stacked device family offers multiple high-performance solutions. The Capulet flash die is manufactured on 90 nm process technology. It delivers 108 MHz synchronous burst and page-mode read rates with supports multi-partitioning with Read-While-Write (RWW) or Read-While-Erase (RWE) dual operations. The LPSDRAM is a high-performance volatile memory operating at speeds up to 104 MHz with configurable burst lengths.

	128M SDRAM	256M SDRAM
JP0	Open	Short
JP1	Short	Open
JP2	Short	Open
JP3	Open	Short
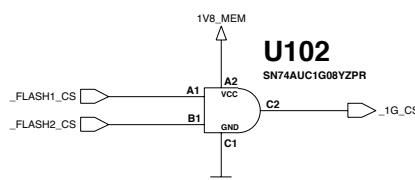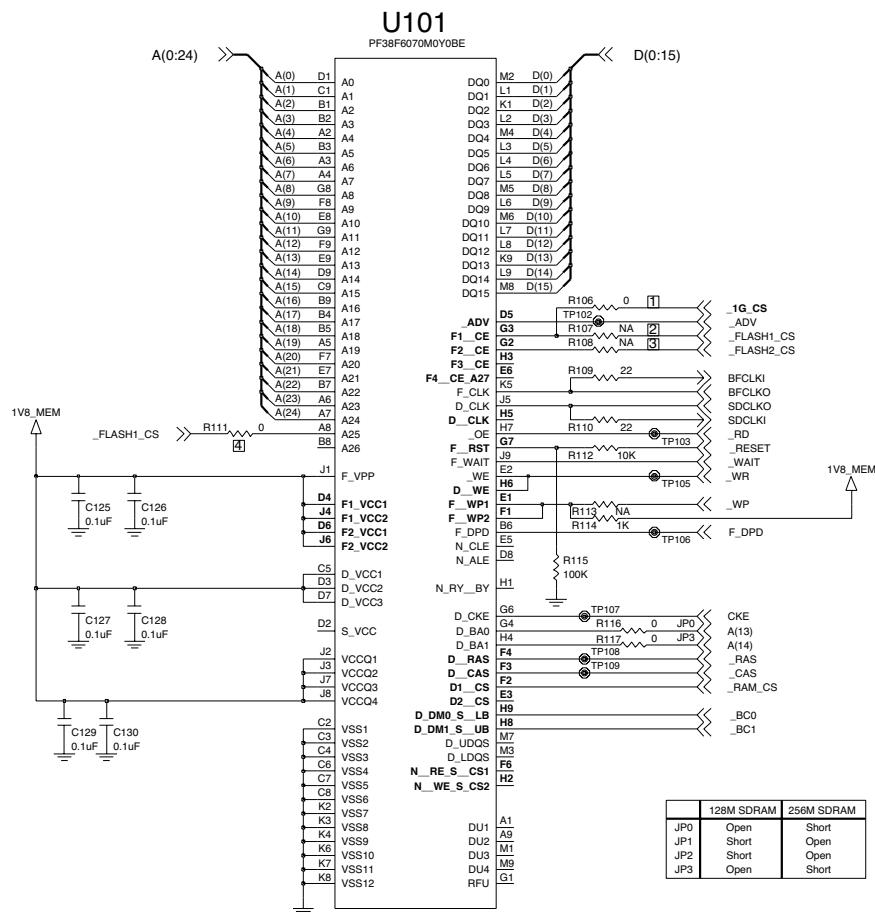
Figure 10 Flash memory & SDRAM MCP circuit diagram

3.7. LCD Display

LCD module include:
- LCD : 176 x 220 262K Colors TFT LCD
- Backlight : 3 piece of white LED illumination

Pin No.	Pin Name	I/O	Description
1	2V72_IO	I	LCD power supply
2	2V72_IO	I	LCD power supply
3	GND		GROUND
4	MLED	I	White LED common Anode
5	MLED1	O	White LED1 Cathode
6	MLED2	O	White LED2 Cathode
7	MLED3	O	White LED3 Cathode
8	GND		GROUND
9	SPK_RCV_P	I	Speaker signal(+)
10	SPK_RCV_N	I	Speaker signal(-)
11	GND		GROUND
12	VIBRATOR_P	I	Vibrator_P(+)
13	GND		GROUND
14	NC		
15	NC		
16	NC		
17	GND		GROUND
18	GND		GROUND
19	DIF_D8	I/O	Data[8] for LCD
20	DIF_D9	I/O	Data[0] for LCD
21	DIF_D10	I/O	Data[10] for LCD
22	DIF_D11	I/O	Data[11] for LCD
23	DIF_D12	I/O	Data[12] for LCD
24	DIF_D13	I/O	Data[13] for LCD
25	DIF_D14	I/O	Data[14] for LCD
26	DIF_D15	I/O	Data[15] for LCD
27	IF_MODE	I	
28	DIF_RD	I	Read strobe
29	DIF_WR	I	Write strobe
30	DIF_CD	I	Data/command selection
31	DIF_CS	I	LCD chip selection
32	DIF_RESET	I	LCD reset
33	DIF_VSYNC	O	Vertical sync
34	LCD_ID	O	LCD maker Identification

**Table 7 LCD FPC Interface Spec.**

3. TECHNICAL BRIEF

3.8. Keypad Switching & Scanning

The keypad interface is a peripheral which can be used for scanning keypads up to 8 rows (outputs from Port Control Logic) and 8 columns (inputs to PCL). The number of rows and columns depend on settings of the PCL.

VOLUME AND CAMERA KEY
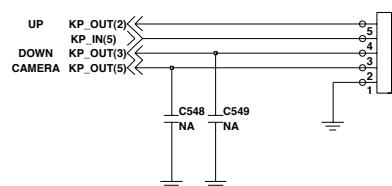
**END KEY**
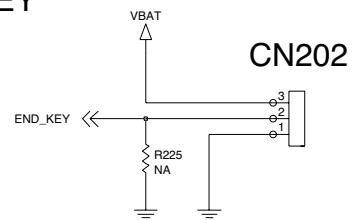
KEY PAD PART
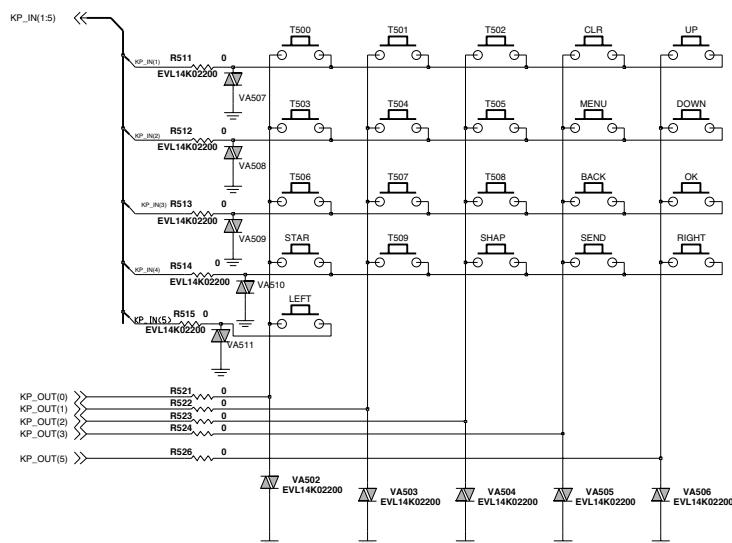
Figure 11 PCB part numeric key matrix

3.9. Keypad back-light illumination
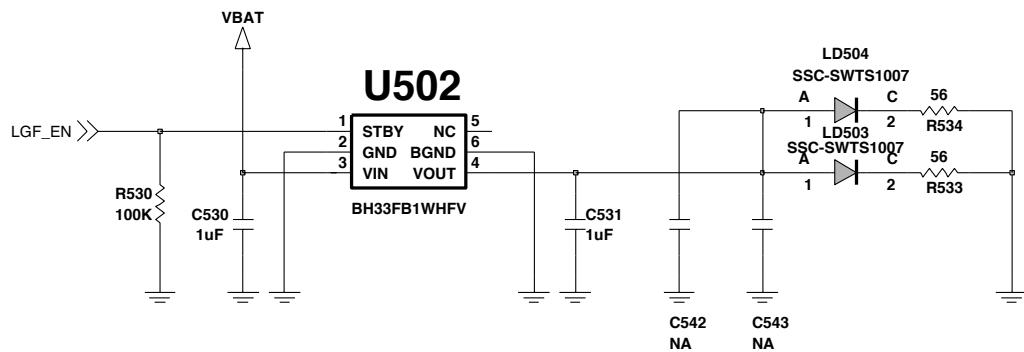
Figure 12 Keypad Back-light LEDs

3.10. LCD back light illumination

Employed the AAT2807 is a dual charge pump designed to support both the white LED backlight and flash applications for systems operating with lithium-ion/polymer batteries. The backlight charge pump is capable of driving up to four LEDs at a total of 60mA. The current sinks may be operated individually or in parallel for driving higher current LEDs. To maximize power efficiency, the charge pump operates in 1X, 1.5X, or 2X mode, where the mode of operation is automatically selected by comparing the forward voltage of each LED with the input voltage.

LCD BACKLIGHT & CAMERA FLASH LED DRIVER
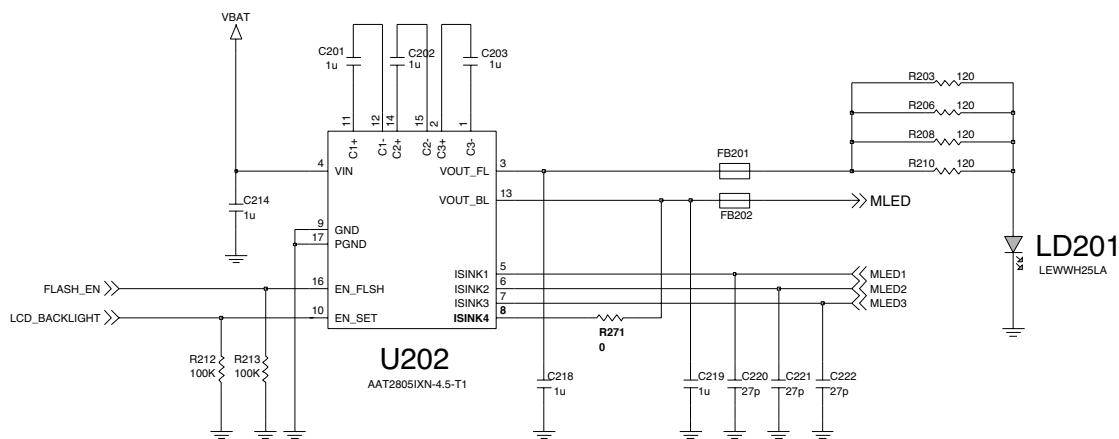
Figure 13 LCD Back light unit and Flash LED charge pump IC

3. TECHNICAL BRIEF

The interface relies on the number of rising edges of the EN/SET pin to address and load the registers. S2Cwire latches data or address after the EN/SET pin has been held high for time TLAT. The interface records rising edges of the EN/SET pin and decodes them into 16 different states, as indicated in table
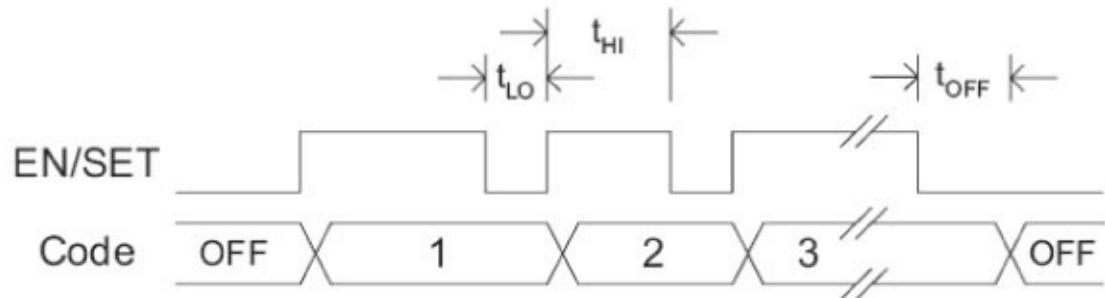
Figure 14 EN/SET port control method

Data	I_{OUT} (mA)
1	20
2	14
3	10
4	7
5	20
6	14
7	10
8	7
9	0
10	0
11	0
12	0
13	0.05
14	0.5
15	1
16	2

Table 8. Charge pump IC LCD part current setting tabl

3.11 Battery current consumption monitor

KE770use a current monitoring function to calculate the battery capacity and the remaining time, as monitoring current flow from the battery thru 47mohm resistor.

BATTERY CURRENT MONITOR
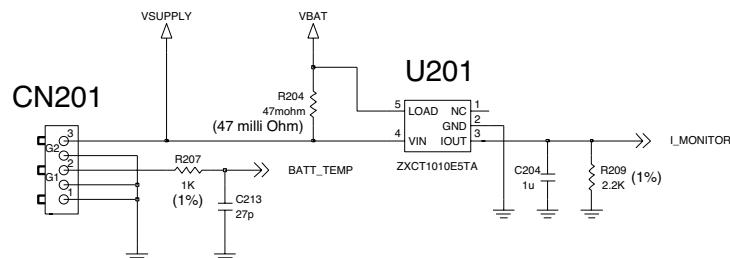
Figure 15 Current monitor circuit

3.12 JTAG & ETM interface connector
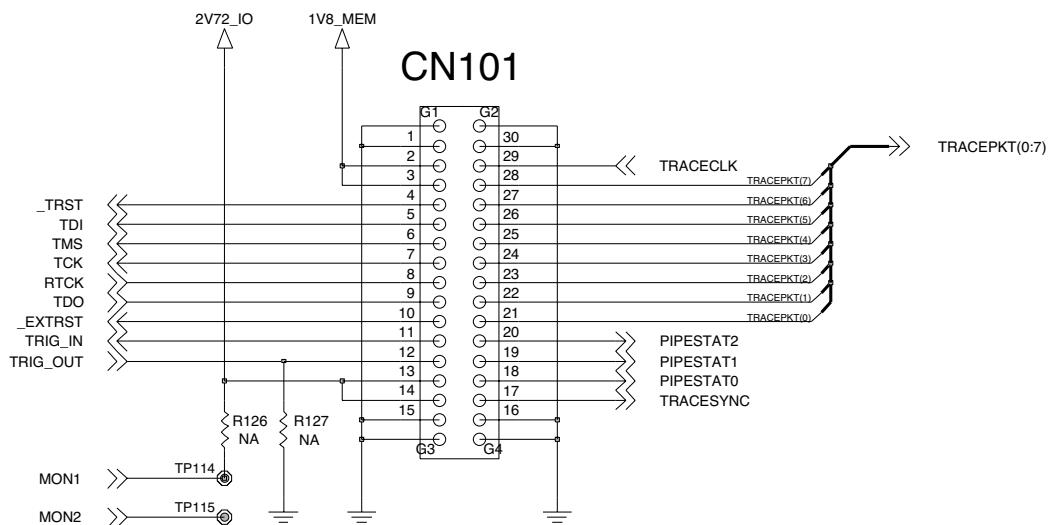
Figure 16 JTAG & ETM(Embedded Trace Module) interface connector

In case of KE770mass production, the JTAG & ETM interface connector will not be mount on board. That is only for developing and software debugging purpose.(It will not be mounted on mass production PCB)

- 46 -

3.13. Audio

KE770Audio signal flow diagram as following diagram.
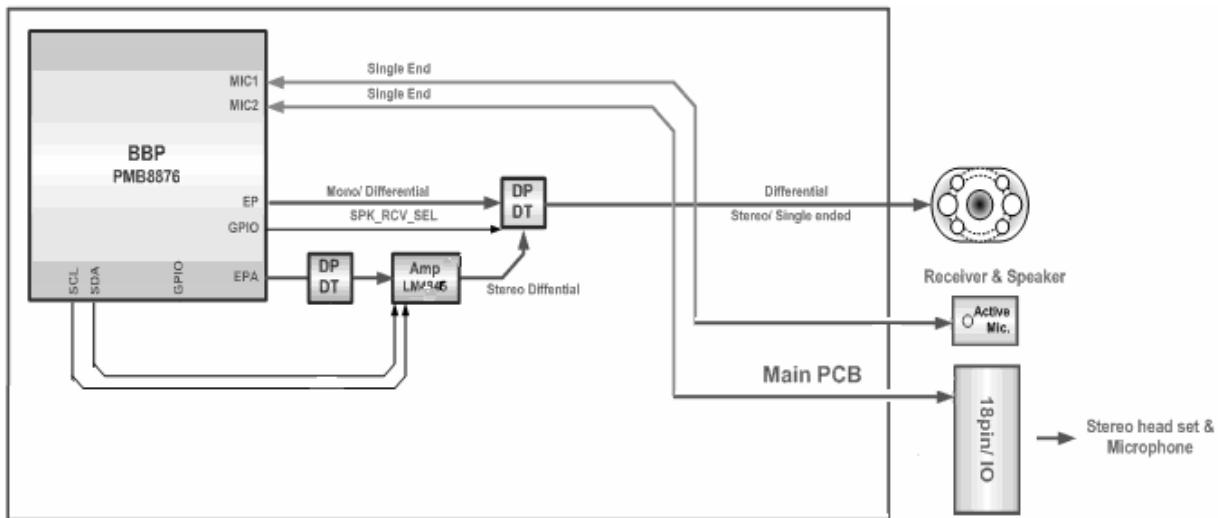
Figure 17 Audio signal flow diagram

3.13.1. Audio amplifier sub system IC

Audio amplifier sub system IC is an audio power amplifier capable of delivering 500mW of continuous average power into a mono 8 load, 25mW per channel of continuous average power into stereo 32 single-ended (SE) loads. The LM4946 features a 32-step digital volume control and eight distinct output modes. The digital volume control, 3D enhancement, and output modes (mono/SE/OCL) are programmed through a two-wire I2C interface that allows flexibility in routing and mixing audio channels.
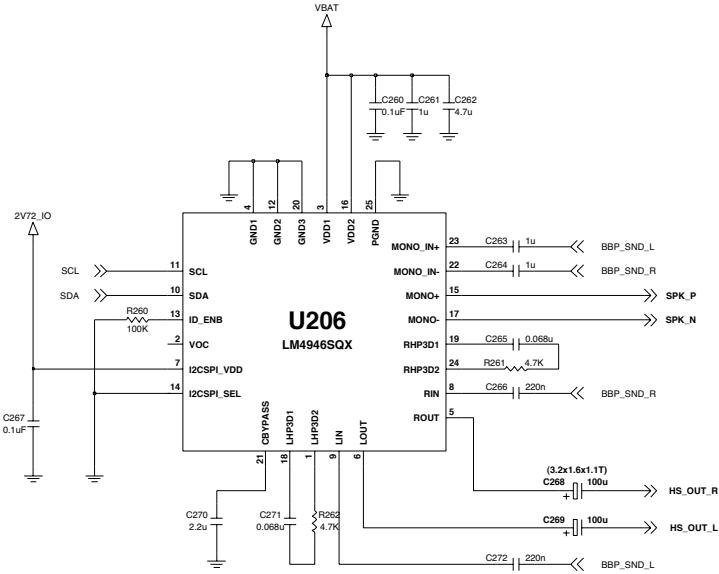
Figure 18 Audio amplifier Sub-system IC

SPK_RCV_SWITCH

(MAIN SPEAKER & RECEIVER PATH Control)

SPK_RCV_SEL	SPK_RCV_P / N Links to
L	RCV_P / N
H	SPK_P / N
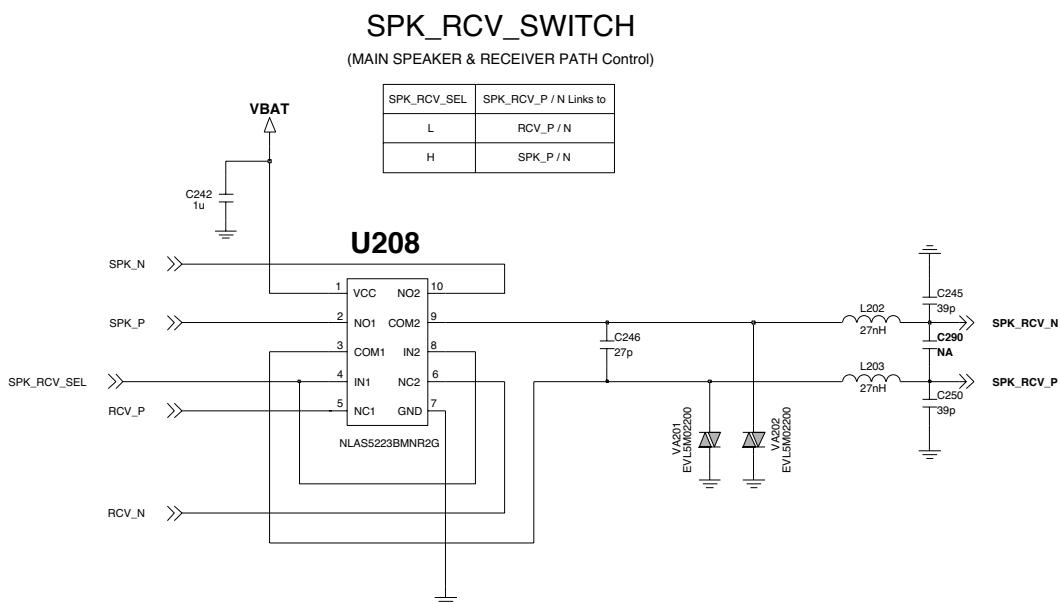
Figure 19 Audio signal distribute analog switch

3. TECHNICAL BRIEF

3.13.2. Microphone with gain switching circuit

Microphone Gain : -42dB

MICROPHONE
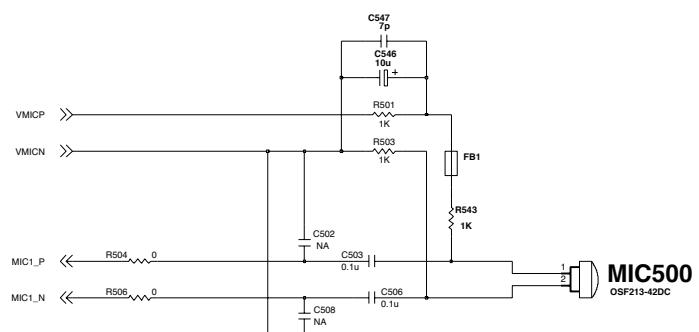
Figure 20 Microphone

3.14. Battery charging/ USB charging circuit

The ICDL pin function is to program the cradle current during the cc mode. The cc mode current is programmed by the following equations

I_{CLD} = 16685.5 / 39K - 0.026 = 400mA

The End Of Charging current is set by IMIN That can be programmed by the as following equation:

I_{EOC} = 14478 / 100K - 4 = 140mA

CHARGIING IC
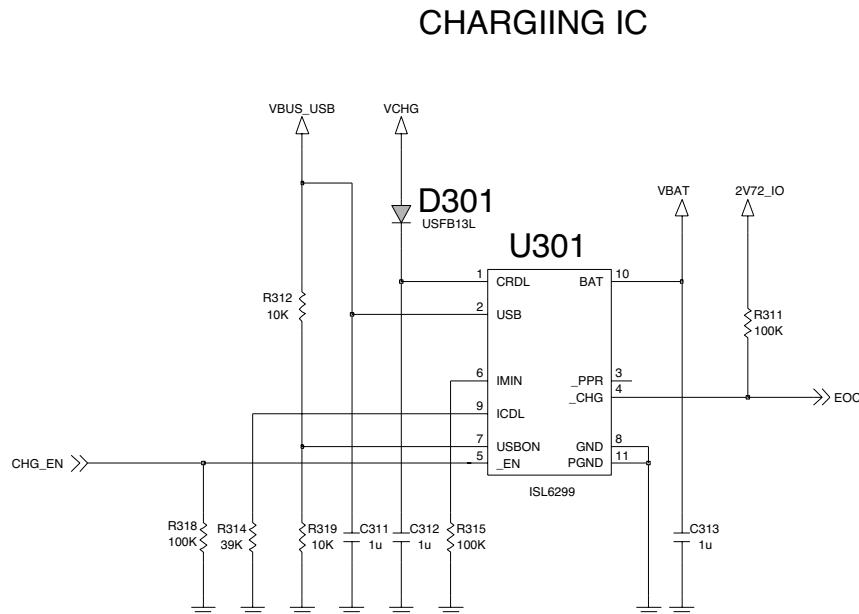
Figure 21 USB charging circuit

Charging indicator LED LD100 controlled by S-GOLD2's GPIO that is CHG_LED_CTRL. When TA(Travel Adaptor) is plugged in to 18pin MMI connector, SM-POWER detect charger voltage then inform charger detecting to S-GOLD2. S-GOLD2 maintain low level of CHG_LED_CTRL until get EOC(End Of Charging) message from SM-POWER. The LD100 controlled by S-GOLD2 both power off and power on case. When USB cable is connected via MMI connector, indicator LED is controlled same mechanism with TA inserted case. USB charging EOC is not indicated when the terminal is in off status. LED just indicates charging status even though USB charging process reached EOC because S_GOLD2 is in off status.

3.15. BLUETOOTH
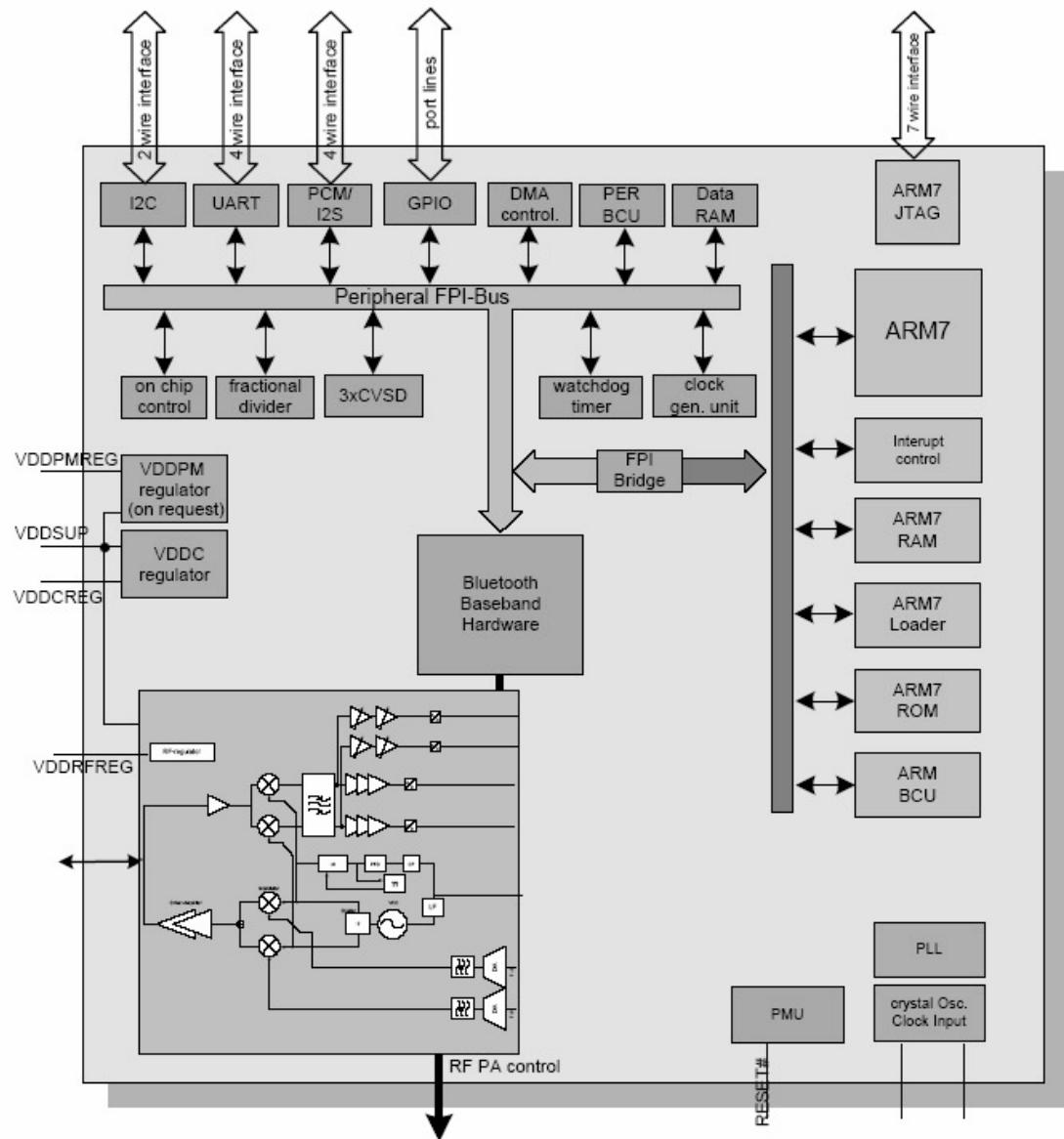
Figure 22 BLUETOOTH Functional block diagram.

3.15.1. General Features

• Single Chip Bluetooth device for cellular applications integrating radio, baseband and memory
• Fabricated in advanced low power 0.13μm CMOS technology
• Very low component count (6 external components)
• Ultra low power design
  - Peak current 40mA for basic data rate
  - Peak current 45mA for enhanced data rate
  - Bluetooth low power mode typ. 25μA
• Multiple input clock signals supported (10-40MHz)
• Supply from external voltage regulator 1.8V..3.6V 1)
• Autonomous power down scenarios of Bluetooth and cellular system supported
• Packages:
  - P-VQFN-48 package
  - P-WFLGA-56 package
• Temperature range from -40°C up to 85°C
• Boundary scan for interface lines via JTAG

3.15.2 Micro-Controller-Section

• ARM7TDMI-STM ARM® Processor for protocol and application software
• Timers + Watchdog + Interrupt Module

3.15.3 Micro-Controller Memory

• 32 KByte RAM
• 256 KByte read only Program Memory
• 8 KByte Patch RAM

3.15.4 Interfaces

• UART (Bluetooth - Interface, support for HCI UART and Three-Wire UART transport layers with/without hardware handshaking) up to 3.25MBaud
• Two channel PCM Audio interface with I2S mode
• I2C Interface
• Three channel full duplex CVSD trans coder
• General Purpose I/Os
  - External interrupt
  - Port output levels available during low-power mode (VDD supplied)
• Separate voltage domains for GPIO, UART and PCM interfaces
• Control signal for requesting external (cellular) system clock
• Multi frequency (e.g. 32.768 kHz) low power clock input

3. TECHNICAL BRIEF

3.15.5. RF-Section

• Integrated antenna switch to minimize external components count
• Programmable RF transmit power between -55dBm...+6dBm
  - Fine tuning in 2dB programmable steps also supported
• 20dBm power class 1 supported with external power amplifier
  - Separate TX output interface to PA (bypass of internal T/R switch)
  - Digital power step control
• Receiver sensitivity typ. -90dBm
• High performance integrated LNA with excellent blocking and inter modulation performance
• Low-IF receiver topology eliminates external IF filters
• Digital demodulation for optimum sensitivity and co- / adjacent channel performance
  - Digital offset compensation, symbol and frame synchronization
• RSSI information for power control

3.15.6 System Integration
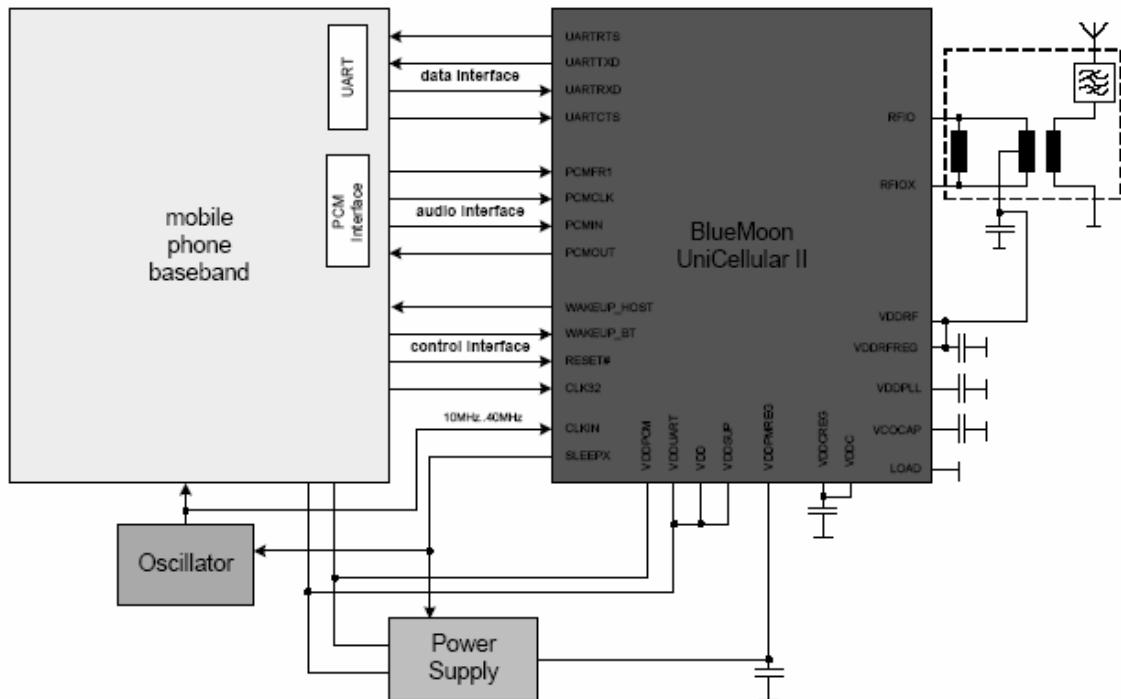
Figure 23 Mobile system integration

The UART (serial interface) is used for the software interface between S-Gold2 baseband and the Bluetooth chip. For the HCI UART transport layer four interface lines are needed, two for data (UARTTXD and UARTRXD) and two for hardware flow control (UARTRTS and UARTCTS). For the HCI Three-Wire UART transport layer two interface lines (UARTTXD and UARTRXD) are needed. The hardware flow control lines (UARTRTS and UARTCTS) are supported but the use is optional. In KE770used three-wire UART communication.

The UART interface has its own supply voltage (VDDUART) to ensure compatibility with the I/O voltages used by the S-Gold2.

The PCM/I2S interface is used as audio interface and can handle up to two voice channels. The PCM interface also has its own supply voltage (VDDPCM) to ensure compatibility with the I/O voltages used by the S-Gold2 baseband processor.

3. TECHNICAL BRIEF

BLUETOOTH
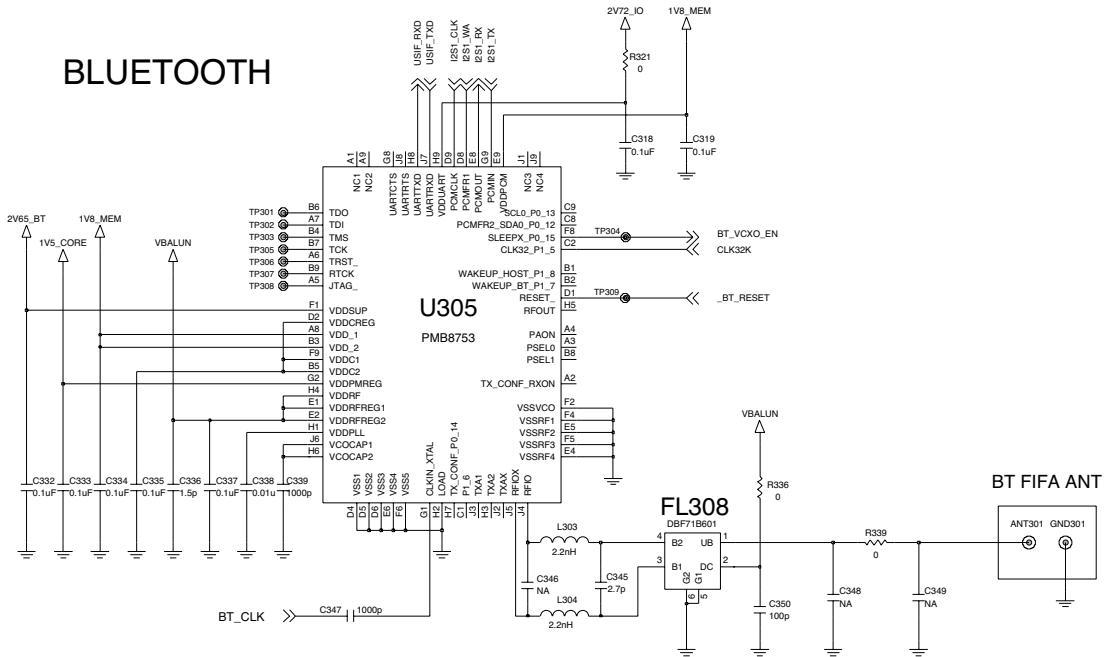
Figure 24 Bluetooth circuit

3.16. Micro SD external memory card slot

The MicroSD Memory Module has eight exposed contacts on one side. The S-Gold2 is connected to the module using a dedicated eight-pin connector

TRANS-FLASH (CONNECTOR) PART
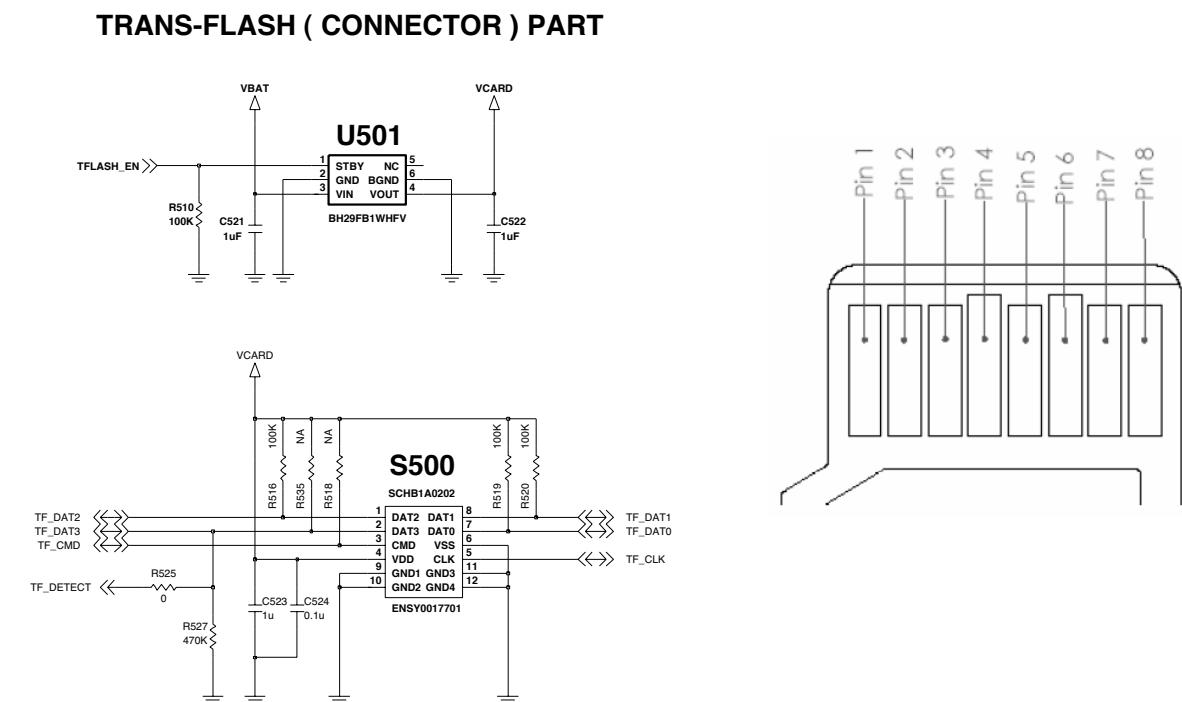
Figure 25 Micro SD pin assignment

3. TECHNICAL BRIEF

SD mode			
Pin No.	Name	Type	Description
1	DAT2	I/O	Data bit [2]
2	CD/DAT3	I/O	Data bit [3]
3	CMD	I/O	Command response
4	VDD	Power	Power supply
5	CLK	I	Clock
6	VSS	Ground	Power ground
7	DAT0	I/O	Data bit [0]
8	DAT1	I/O	Data bit [1]

Table 7 Micro SD memory pad assign.

	Micro SD card status	
	it is removed	it is inserted
TF_DETECT	High	Low

Table 8 Micro SD memory card detect truth table.

3.17. 18pin Multi Media Interface connector

Table 11 Multi media interface pin assign

	KE770MMI	
	Pin Function	**Description**
1	GND	
2	MIC2_P	
3	JACK_TYPE	
4	MULTI_PORT_2	
5	MULTI_PORT_3	
6	MULTI_PORT_0	
7	MULTI_PORT_1	
8	JACK_DETECT	
9	VSUPPLY	
10	VSUPPLY	
11	RPWRON	
12	VCHG	
13	VCHG	
14	DSR	
15	VBUS_USB	
16	TX_DEBUG	
17	RX_DEBUG	
18	GND	
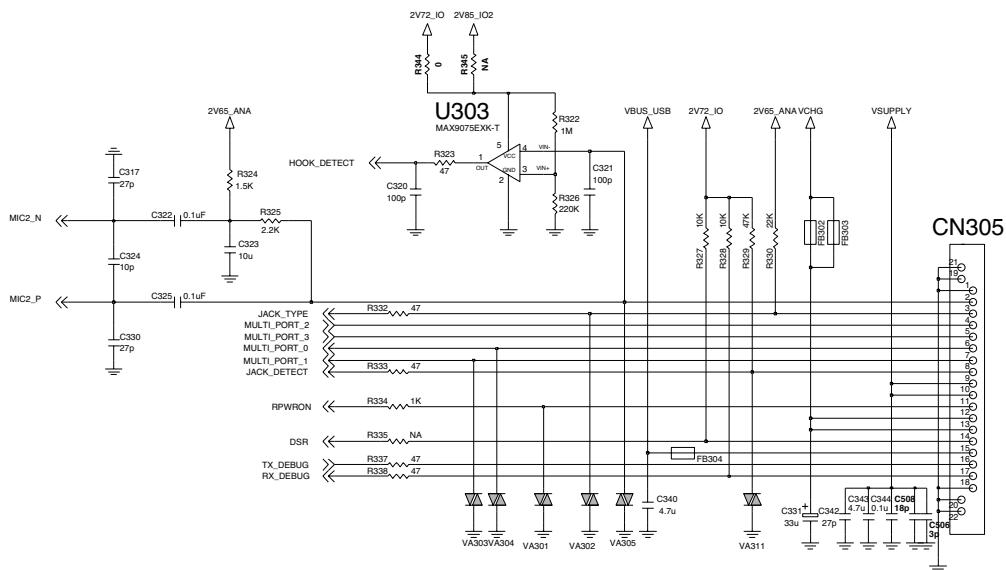
Figure 26 18 pin connector circuit

3. TECHNICAL BRIEF

III-2. RF circuit

*RF Block Diagram
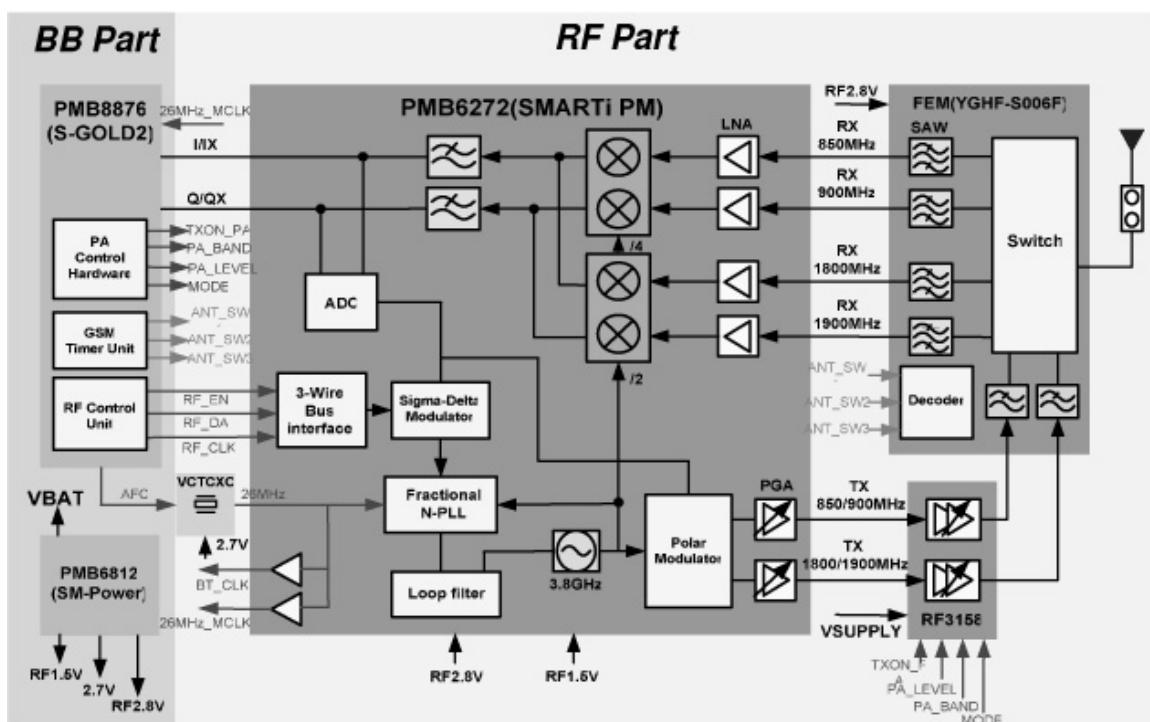
3.18. General Description

The RF transceiver (PMB 6272 SMARTi-PM) is an integrated single chip, quad-band transceiver for GSM850/GSM900/GSM1800/GSM1900 designed for voice and data transfer applications. The transceiver provides an analog I/Q baseband interface and consists of a direct conversion receiver and a quad-band polar transmitter for GSM and EDGE with integrated PGA functionality. Further on a completely integrated SD-synthesizer with HSCSD and GPRS/EDGE capability, a digitally controlled reference oscillator with three outputs, a fully integrated quad-band RF oscillator and a three wire bus interface with all necessary control circuits complete the transceiver.
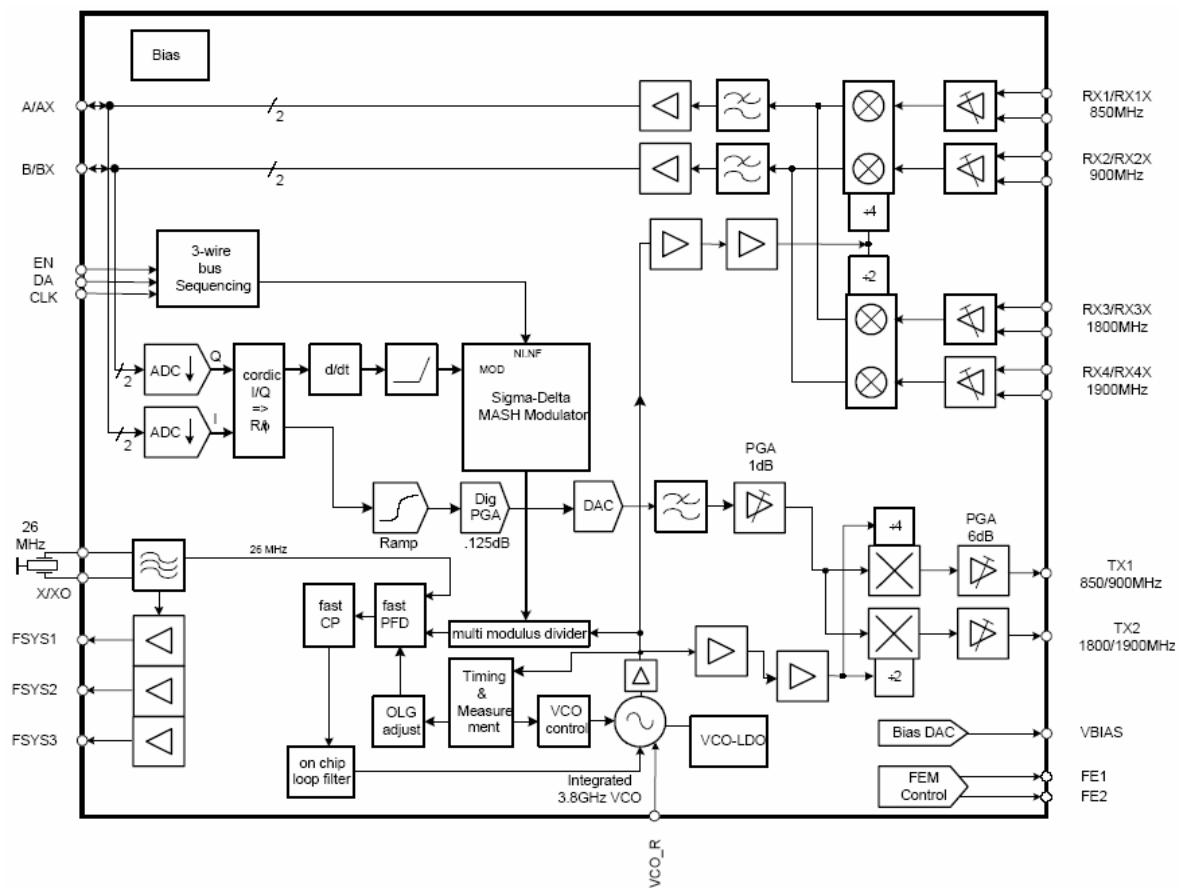
Figure 28 RF transceiver PMB7262 SMARTi-PM functional block diagram

3. TECHNICAL BRIEF
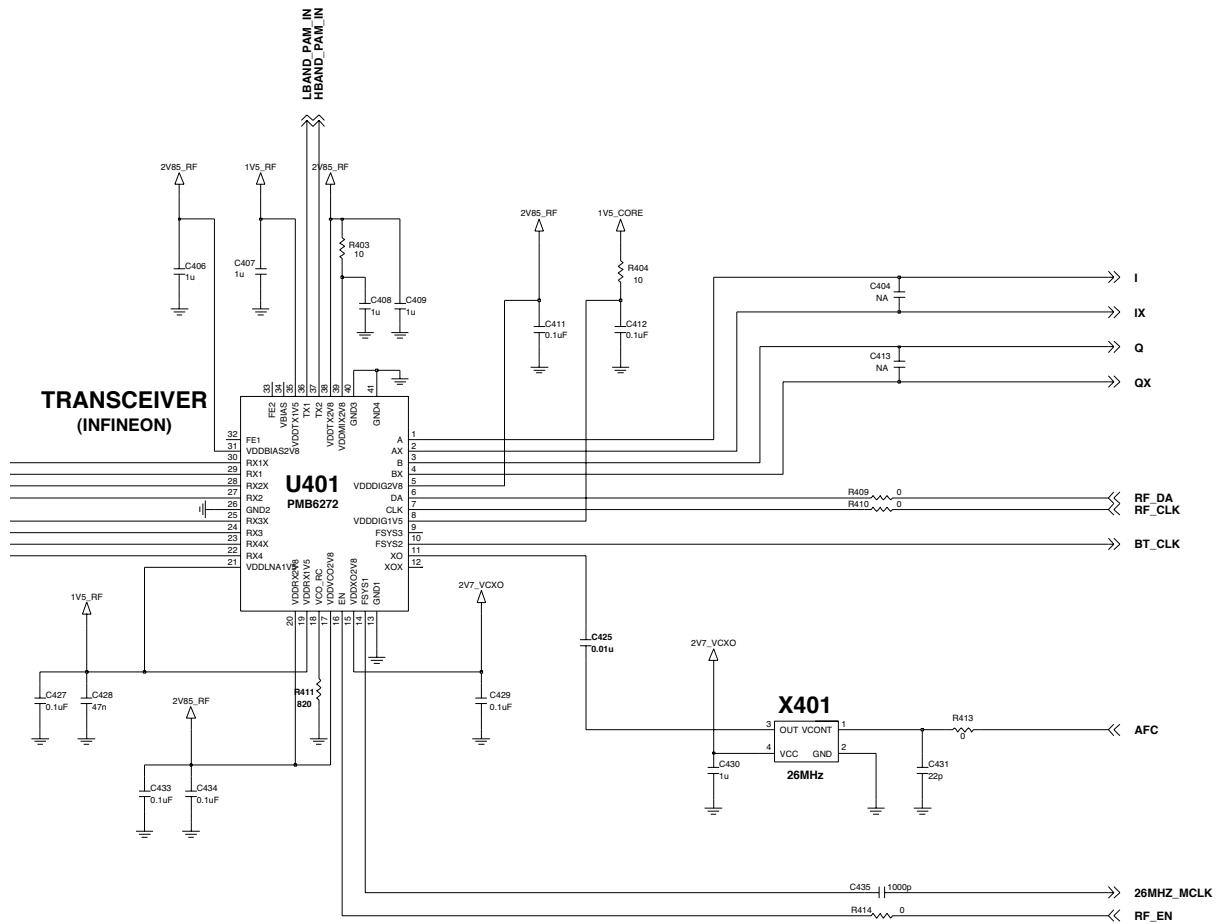
Figure 29 RF transceiver PMB7262 SMARTi-PM schematic

3.19. Receiver part
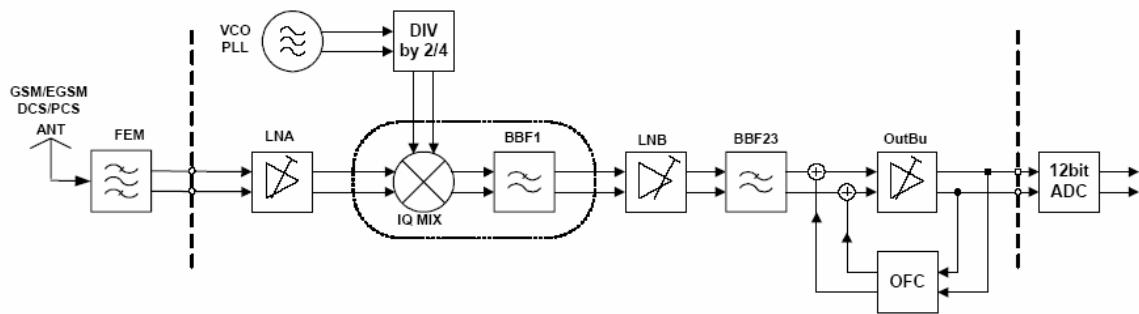
Figure 30 Receiver part block diagram

The constant gain direct conversion receiver contains all active circuits for a complete receiver chain for GSM/GPRS/EDGE (see Figure 39). The GSM850/900/DCS1800/ PCS1900 LNAs with balanced inputs are fully integrated. No inter-stage filtering is needed. The orthogonal LO signals are generated by a divider-by-four for GSM850/900 band and a divider-by-two for the DCS1800/PCS1900 band. Down conversion to baseband domain is performed by low/high band quadrature direct down conversion mixers.

The baseband chain contains a LNB (low noise buffer), channel filter, output buffer and DC-offset compensation. The 3rd order low pass filter is fully integrated and provides sufficient suppression of blocking signals as well as adjacent channel interferers and avoids anti-aliasing through the baseband ADC. The receive path is fully differential to suppress on-chip interferences. Several gain steps are implemented to cope with the dynamic range of the input signals. Depending on the baseband ADC dynamic range, single- or multiple gain step switching schemes are applicable. Furthermore an automatic DC-offset compensation can be used (depending on the gain setting) to reduce the DC-offset at baseband-output. A programmable gain correction can be applied to correct for front end- and receiver gain tolerances.

3.20. Transmitter part

The GMSK transmitter supports power class 4 for GSM850 and GSM900 as well as power class 1 for DCS1800 and PCS1900. The digital transmitter architecture is based on a very low power fractional-N Sigma-Delta synthesizer without any external components (see Figure39). The analog I/Q modulation data from the baseband is converted to digital, filtered and transformed to polar coordinates. The phase/frequency signal is further on processed by the Sigma-Delta modulation loop. The output of its associated VCO is divided by four or two, respectively, and connected via an output buffer to the appropriate single ended output pin. This configuration ensures minimum noise level. The 8PSK transmitter supports power class E2 for GSM850 and GSM900 as well as for DCS1800 and PCS1900. The digital transmitter architecture is based on a polar modulation architecture, where the analog modulation data (rectangular I/Q coordinates) is converted to digital data stream and is subsequently transformed to polar coordinates by means of a CORDIC algorithm. The resulting amplitude information is fed into a digital multiplier for power ramping and level control. The ready processed amplitude signal is applied to a DAC followed by a low pass filter which reconstructs the analog amplitude information. The phase signal from the CORDIC is applied to the Sigma-Delta fractional-N modulation loop. The divided output of its associated VCO is fed to a highly linear amplitude modulator, recombining amplitude and phase information. The output of the amplitude modulator is connected to a single ended output RF PGA for digitally setting the wanted transmit power. The PA interface of SMARTi-PM supports direct control of standard dual mode power amplifiers (PA's) which usually have a power control input VAPC and an optional bias
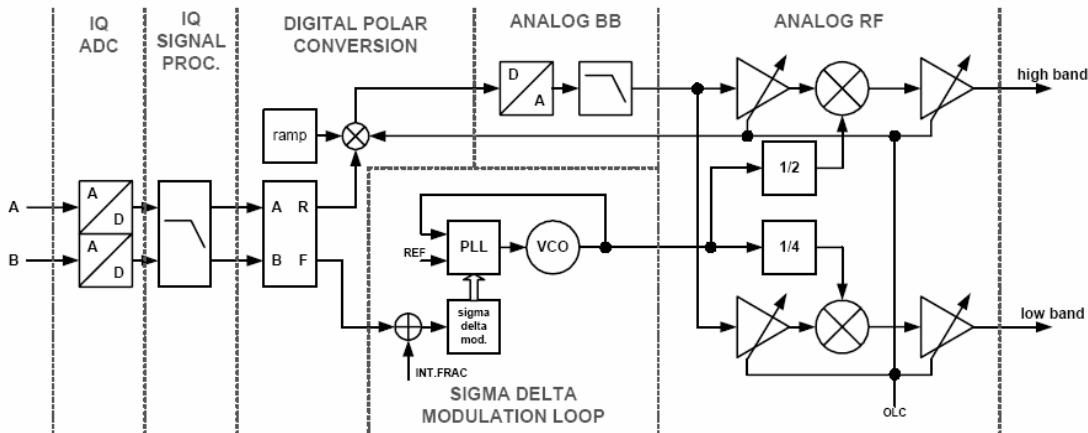
Figure 31 Transmitter part block diagram

control pin VBIAS for efficiency enhancement. In GMSK mode, the PA is in saturated high efficiency mode and is controlled via its VAPC pin directly by the baseband ramping DAC. In this way both up- / down-ramping and output power level are set. In 8PSK mode, the ramping functionality is assured by an on-chip ramping generator, whereas output power is controlled by the PGA's as described above.

3.21. RF synthesizer

The transceiver contains a fractional-N sigma-delta synthesizer for the frequency synthesis in the RX operation mode. For TX operation mode the fractional-N sigma-delta synthesizer is used as Sigma-Delta modulation loop to process the phase/frequency signal. The 26MHz reference signal is provided by the internal crystal oscillator. This frequency serves as comparison frequency of the phase detector and as clock frequency for all digital circuitry.The divider in the feedback path of the synthesizer is carried out as a multi-modulus divider (MMD). The loop filter is fully integrated and the loop bandwidth is about 100 kHz to allow the transfer of the phase modulation. The loop bandwidth is automatically adjusted prior to each slot (OLGA[2]). To overcome the statistical spread of the loop filter element values an automatic loop filter adjustment (ALFA) is performed before each synthesizer startup. The fully integrated quad-band VCO is designed for the four GSM bands (850, 900, 1800, 1900 MHz) and operates at double or four times transmit or receive frequency. To cover the wide frequency range the VCO is automatically aligned by a binary automatic band selection (BABS) before each synthesizer startup.

3.22. VCTCXO

The VCTCXO (X401) supply 26MHz reference clock and controlled by AFC input to generate a strict system clock. The 26MHz clock is used to Transceiver(U402), Bluetooth chip(U102) and S-Gold2 (U102).
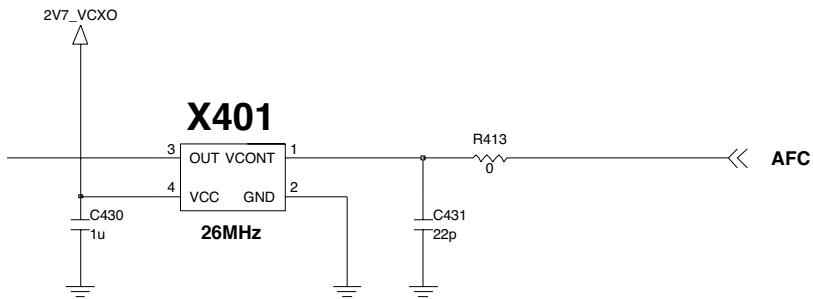
Figure32 VCTCXO Schematic

3.23. Front End Module control

Implemented in the S-Gold2 (U102) are three outputs which are ANT_SW1, ANT_SW2 and ANT_SW3 for direct control of front end modules with three logic input pins to select RX and TX mode as well as low and high band operation.

Table 12 FEM Control Logic

MODE	VC1	VC2
PGSM/EGSM_Tx	H	L
DCS/PCS_Tx	L	H
PGSM_Rx	L	L
EGSM_Rx	L	L
DCS_Rx	L	L
PCS_Rx	L	L
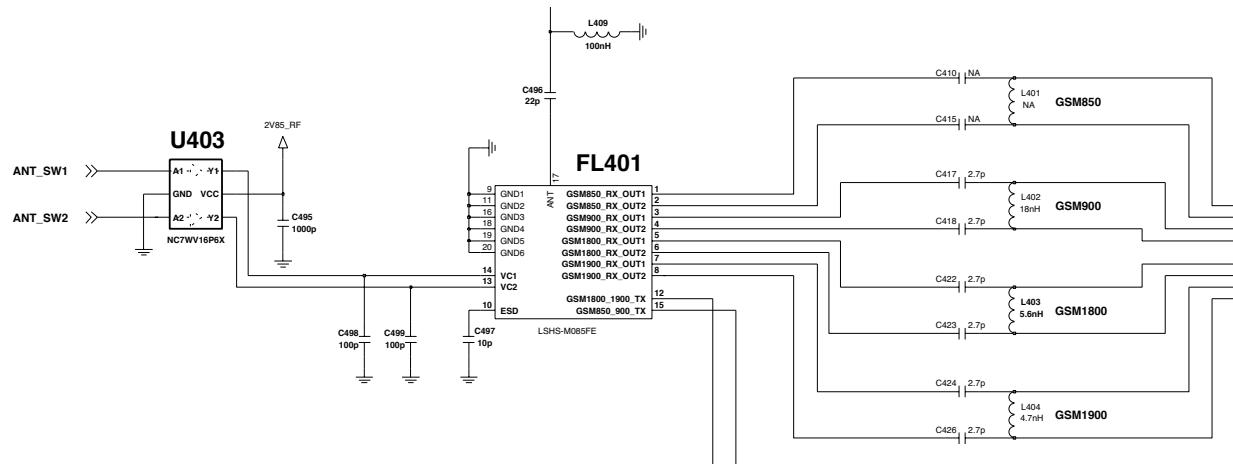
Figure 33 FEM schematic

3.24. Power Amplifier Module

The RF3158 (U501) is a high-power, dual-mode amplifier (PA) with integrated power control. This PA is designed to operate both in a saturated mode for GMSK signaling and in a linear mode for 8PSK modulation. Featuring input and output terminals that are internally matched to 50 ohms, the PAM is designed to be the final amplification stage in a dual-mode GSM/EDGE mobile transmit lineup operating in the 824 MHz to 915 MHz (low) and 1710 MHz to 1910 MHz (high) bands.

PIN	Function	Description
1	HB_RFIN	RF input to the High-band PA
2	BAND_SEL	Logic low=low band, Logic high=high band select
3	TX_EN	PA Enable
4	VBATT	Main supply
5	VMODE	Logic low=GMSK mode, Logic high=8PSK mode select
6	VRAMP	Ramped burst pin
7	LB_RFIN	RF input to the Low-band PA
8,9,10,11	GND	Ground
12	LB_RFOUT	RF output from the low-band PA
13,14,15,16,17	GND	
18	HB_RFOUT	RF output from the high-band PA
19,20,21,22,23	GND	

3.24.1 Dual Mode Operation

MODE	VMODE	RF INPUT	VRAMP	TX ENABLE
GSM	Low	Fixed	Ramp Burst Control	High
EDGE	High	Ramp Burst Control	Control amp bias current	High

When VMODE is low, the voltage on VRAMP is used to regulate the PA collector voltage which directly controls the output power. When VMODE is high, the PA collector voltage is regulated to 3.6V, and the supply for the PA base bias can be adjusted via the VRAMP pin to optimize current drain for low or high power ranges. In addition, in 8PSK mode, the first stage of the low band PA is bypassed to decrease gain, but in high band, the PA operates with all stages.

4. PCB layout

4.1 Main & Sub PCB component placement
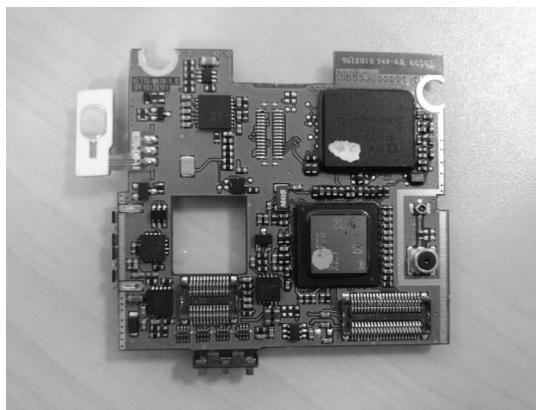
Figure 35 Main PCB top.
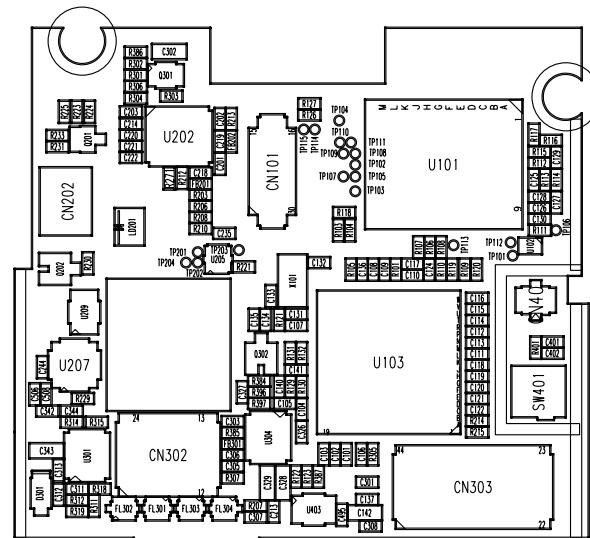
Figure 36 Main PCB top placement
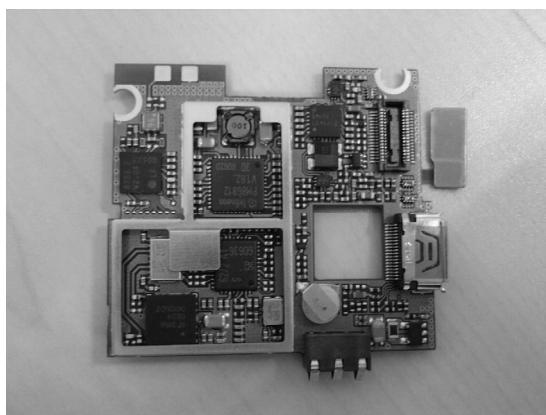
Figure 37 Main PCB bottom
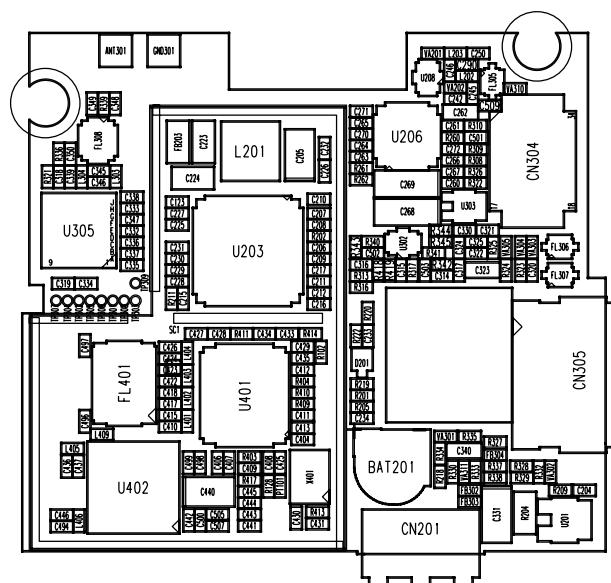
Figure 38 Main PCB bottom placement
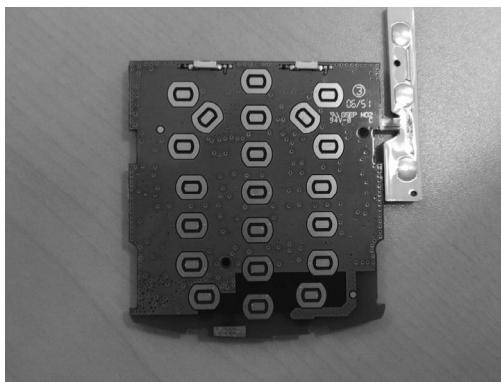
Figure 39 Sub PCB top
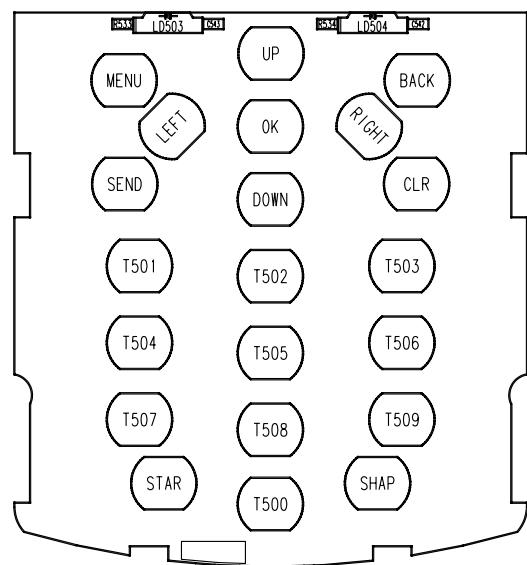
Figure 40 Sub PCB top placement
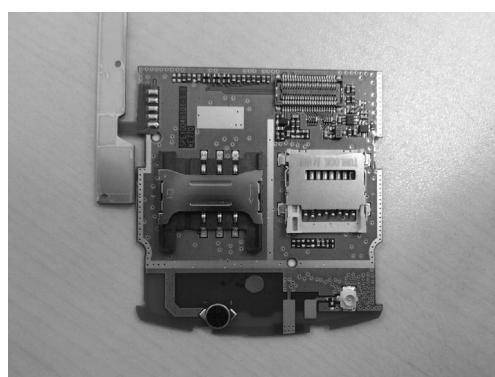
Figure 41 Sub PCB bottom
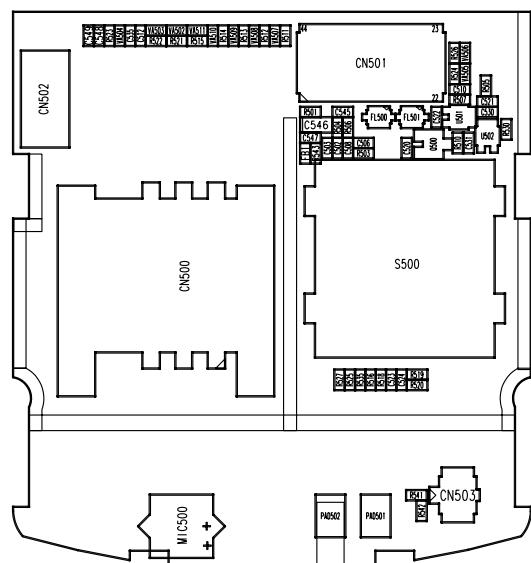
Figure 42 Sub PCB bottom placement

5. Trouble shooting

5.1 Trouble shooting test setup
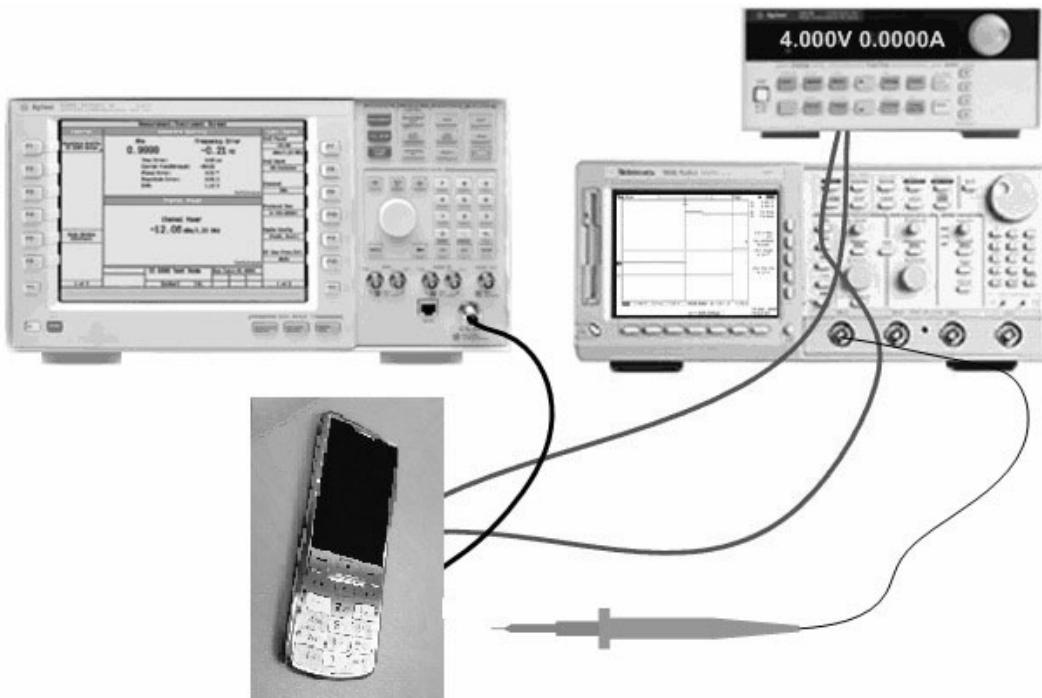
Figure 43 Equipment setup

Power on all of test equipment
-Connect PIF-UNION JIG or dummy battery to the DUT for power up.
-Connect mobile switch cable between Communication test set and DUT when you need to make a
 phone call.
-Follow trouble shooting procedure

5.2 Power on Trouble

Check Points
-Battery Voltage(Need to over 3.35V)
-Power-On Key detection (PWRON signal)
-Outputs of LDOs from PMIC

5.2 Power on Trouble

Check Points

-Battery Voltage(Need to over 3.35V)

-Power-On Key detection (PWRON signal)

-Outputs of LDOs from PMIC
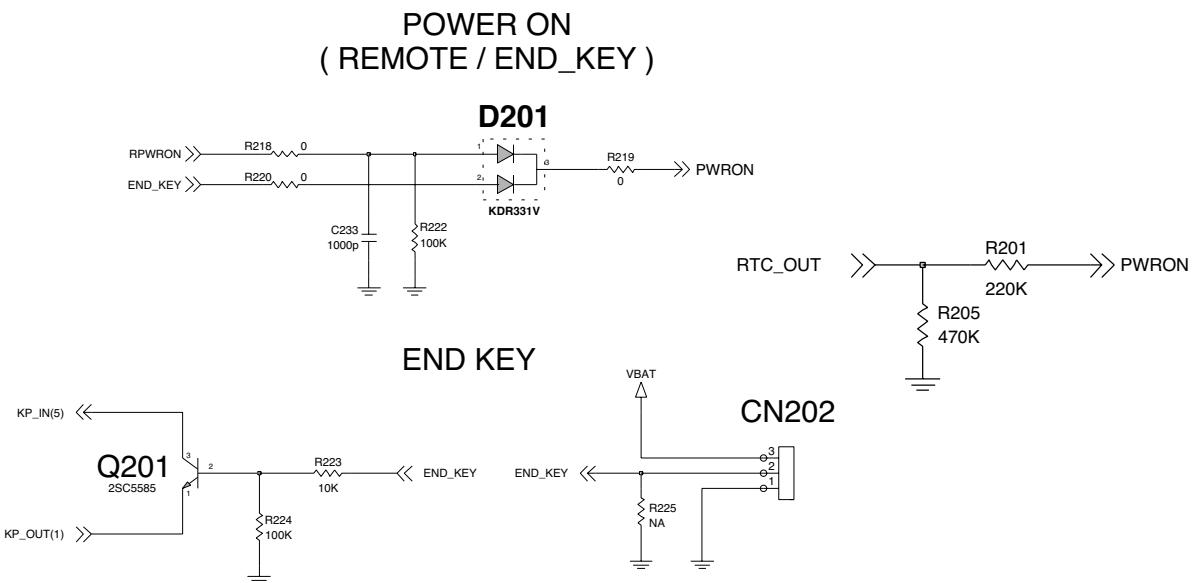
Figure44 Power ON Schematic

Waveform

5. Trouble shooting

```
                      ┌─────────────────────┐
                      │        START        │
                      └─────────────────────┘
                                 │
                                 ▼
                      ┌─────────────────────┐
                      │    Connect power    │
                      │  supply to the DUT  │
                      │  Vbat = over 3.35V  │
                      └─────────────────────┘
                                 │ Yes
                                 ▼
                                                            ┌──────────────────────────┐
                      ◇ "PWRON" signal ◇    No              │   Check the RPWRON,       │
                      ◇   = VBAT?      ◇ ───────────────►    │   replace D201            │
                                                            │                           │
                                 │ Yes                      │   Check END key FPCB      │
                                 ▼                          │   Or Replace it.          │
                                                            └──────────────────────────┘
                      ◇ "_RESET" signal ◇   No              ┌──────────────────────────┐
                      ◇  goes to high?  ◇ ───────────────►  │   Check solder            │
                                                            │   U205 or replace it      │
                                 │ Yes                      │                           │
                                 ▼                          │   Check B to B connector  │
                                                            └──────────────────────────┘
                      ◇ Check the all LDO's ◇  No           ┌──────────────────────────┐
                      ◇     output         ◇ ───────────►   │  Check camera connector   │
                      ◇   Is it correct?   ◇                │  Or replace camera module.│
                                                            │                           │
                                 │ Yes                      │   Check solder            │
                                 ▼                          │   U203 or replace it      │
                                                            └──────────────────────────┘
                      ◇  Is the 26MHz     ◇   No            ┌──────────────────────────┐
                      ◇  clock From X401  ◇ ───────────►    │   Check solder            │
                      ◇  signal correct?  ◇                 │   X401, U401              │
                                                            │   or replace it           │
                                 │ Yes                      └──────────────────────────┘
                                 ▼
                      ┌─────────────────────┐
                      │   Replace main PCB  │
                      └─────────────────────┘
```

Outputs of LDOs from PMIC

PMIC & Li-ion CHARGER

SM-POWER LDOS	2V7_VCXO	1V5_CORE	1V8_MEM	1V5_DSP	2V72_IO	2V65_ANA	2V85_SIM	2V85_IO2	2V85_MMC	3V1_USB	1V5_RF	2V85_RF
	VRF2	VLBB2	SW (SDBB)	VLBB1	VINT	VANA	VSIM1	VSIM2	VMMC	VUSB	VRFC	VRF1
Delay time(msec)	20	24.2	23.7	26.2	26.2	28.1	30.2	32.2	34.3	36.6	628	628

5. Trouble shooting

5.3 Charging trouble

Check Points

-Connection of TA (check TA voltage 4.8V)

-Charging Current Path component voltage drop

-Battery voltage

• Charging method : CC-CV

• Charger detect voltage : about 4.0V

• ChCharging time : 3h under

• Charging current : 500mA

• Cutoff current : 100mA

• Low battery alarm

   - Idle : 3.62V

   -. Dedicated : 3.50V

• Switch-off voltage : 3.35V

• Charging temperature ADC range

   - ~ -20°C : small charging operation.

   - -20°C ~ 60°C : charging.

   - 60°C ~ : not charging operation small

                    charging operation.
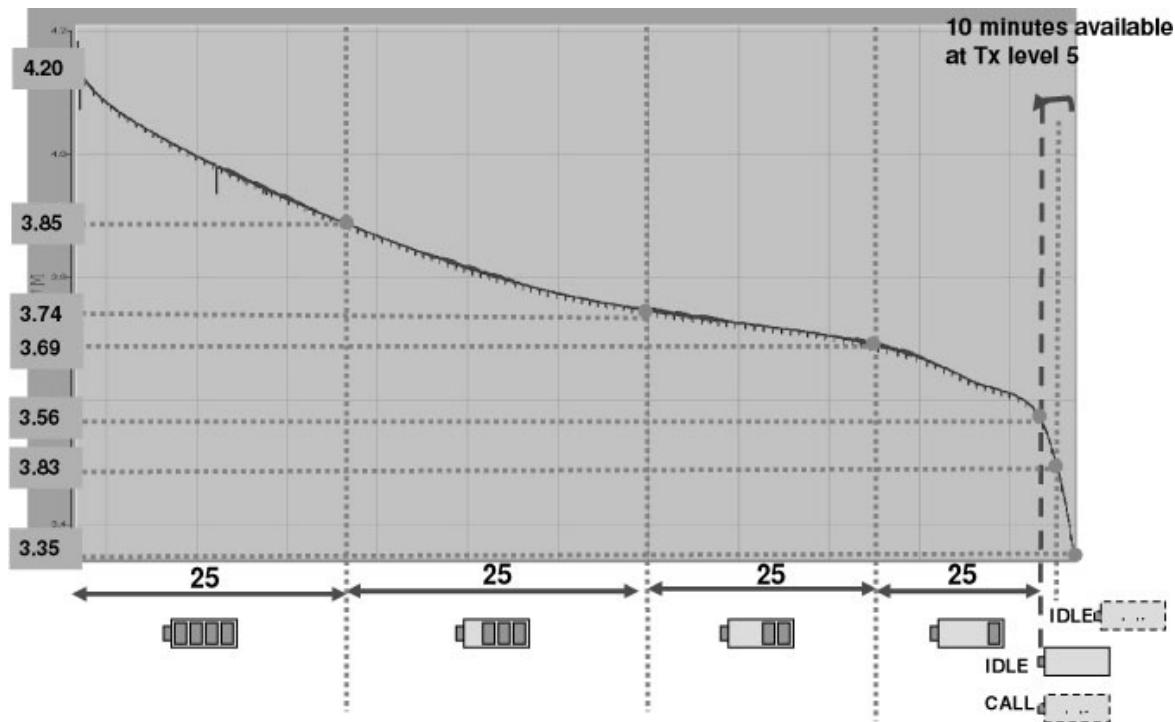
CHARGIING IC
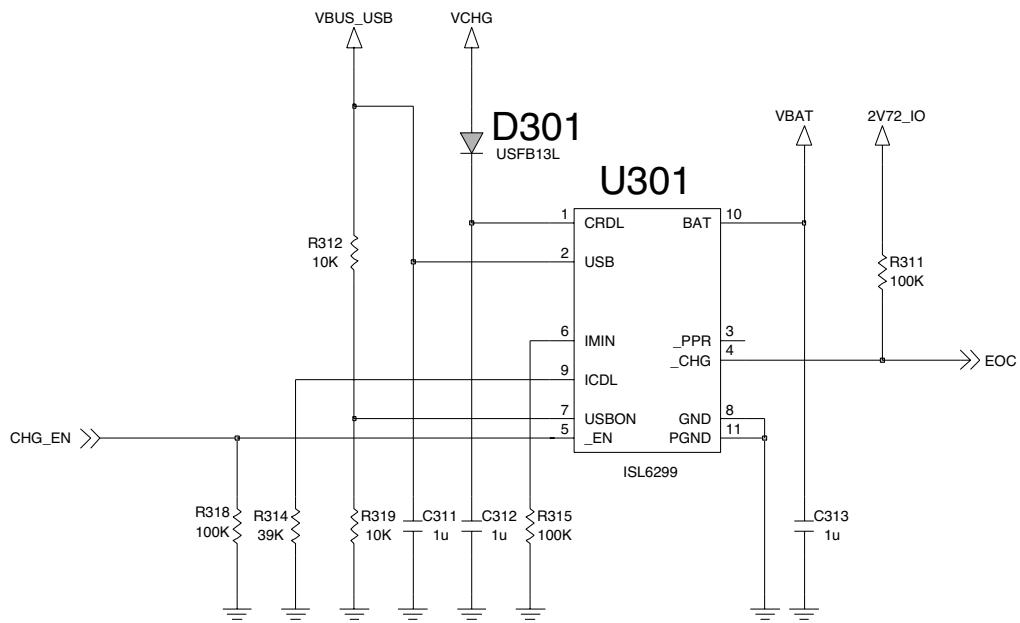
Charging

• Connecting TA & Charger Detection
• Control the charging Current by internally programmed algorithm inside charging IC

Check

• Connection of TA (check TA voltage 4.8V)
• Charging Current Path component

5. Trouble shooting

```
                        ┌────────────────────────┐
                        │         START          │
                        └────────────────────────┘
                                    │
                                    ▼
                              ╱          ╲           No      ┌──────────────────────┐
                           ╱   18pin MMI(CN305) ╲ ──────────▶│  Re- solder the CN305 │
                           ╲    Is soldered ?   ╱            └──────────────────────┘
                              ╲          ╱
                                │ Yes
                                ▼
                              ╱          ╲           No      ┌──────────────────────┐
                           ╱   CRDL pin       ╲ ──────────▶│  The TA can be broken │
                           ╲  of U301 = 4.8V ? ╱            │  Change other TA      │
                              ╲          ╱                  │  then retest          │
                                │ Yes                        └──────────────────────┘
                                ▼
                              ╱          ╲           No      ┌──────────────────────┐
                           ╱  "CHG_EN" signal ╲ ──────────▶│  Check solder         │
                           ╲   goes to low?   ╱            │  U301 or replace it   │
                              ╲          ╱                  └──────────────────────┘
                                │ Yes
                                ▼
                              ╱          ╲           No      ┌──────────────────────┐
                           ╱  D301 voltage drop ╲ ────────▶│  Replace it           │
                           ╲  is near 0.3V ?    ╱          └──────────────────────┘
                              ╲          ╱
                                │ Yes
                                ▼
                              ╱          ╲           No      ┌──────────────────────┐
                           ╱  Battery voltage is over ╲ ──▶│  Waiting until battery │
                           ╲       3.4V?        ╱          │  Voltage goes up to 3.4V│
                              ╲          ╱                  └──────────────────────┘
                                │ Yes
                                ▼
                              ╱          ╲           No      ┌──────────────────────┐
                           ╱  Battery thermistor value ╲ ─▶│  Change the Battery    │
                           ╲   is about 68K?    ╱          │  retest                │
                              ╲          ╱                  └──────────────────────┘
                                │ Yes
                                ▼
                        ┌────────────────────────┐
                        │ Charge is operating properly │
                        └────────────────────────┘
```

5.4 LCD display trouble

Check Points

-LCD assembly status (FPCB)

-EMI filter soldering

-Connector combination

LCD CONNECTOR (34 PIN, SOCKET)
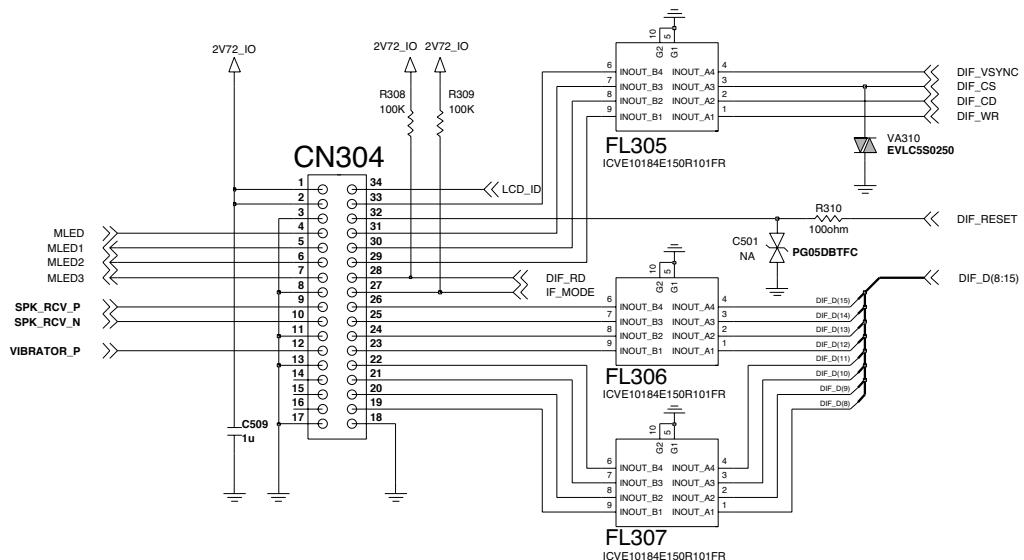
Main PCB I/F Connector

Check signal line disconnection of the LCD FPCB

Check signal flow EMI filter

FL306
FL307
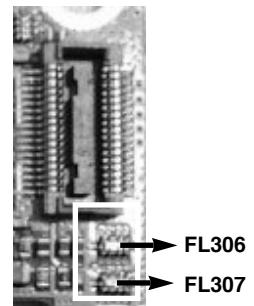
5.5 Camera Trouble

Check Points

-Connectors combination

-EMI filter soldering

-FPCB status

2M FF CAMERA I/F CONNECTOR
(24PIN, SOCKET)

CAM Power ON/OFF Sequence

CAMERA POWER

```
          ┌──────────────┐
          │    START     │
          └──────┬───────┘
                 │
   ┌─────────────▼──────────────┐
   │ Check camera connector,    │
   │  24pin main PCB connector  │
   │ combination then Camera test│
   │ with equipped camera module │
   └─────────────┬──────────────┘
                 │
            ◇─────────◇         No    ┌──────────┐
            EMI filters are ─────────▶│ Resolder │
            soldered well?            └──────────┘
            ◇─────────◇
                 │ Yes
            ◇─────────◇         No    ┌──────────┐
            Replace New    ─────────▶ │ Replace  │
            Camera                    │ Main PCB │
            module                    └──────────┘
            ◇─────────◇
                 │ Yes
   ┌─────────────────────────────┐
   │  Replace Camera module      │
   └─────────────┬───────────────┘
                 │ Yes
          ┌──────▼───────┐
          │   Assemble   │
          └──────────────┘
```
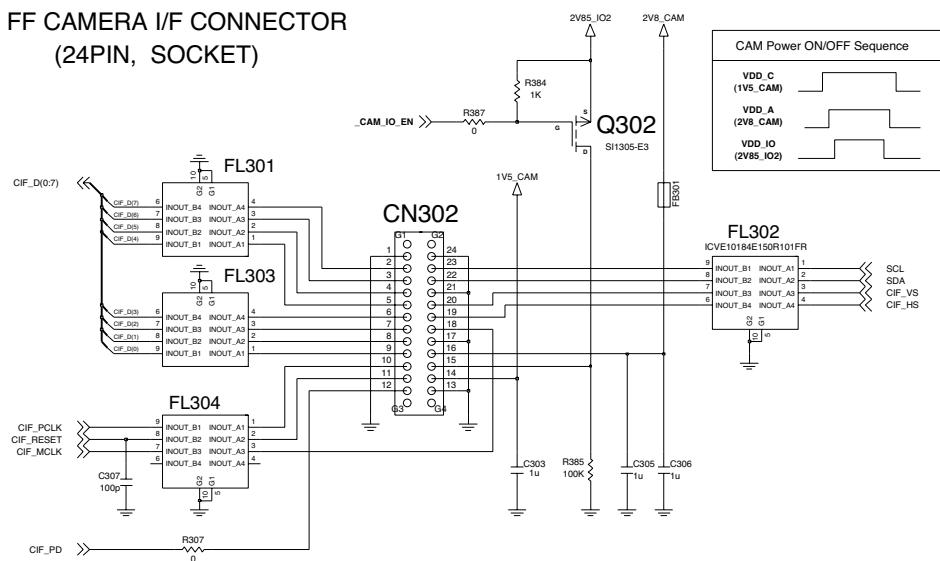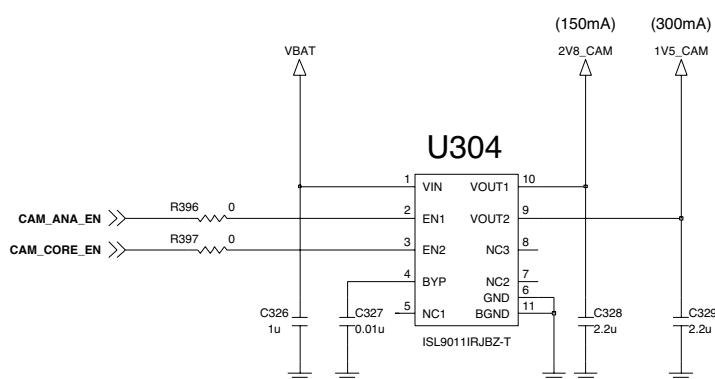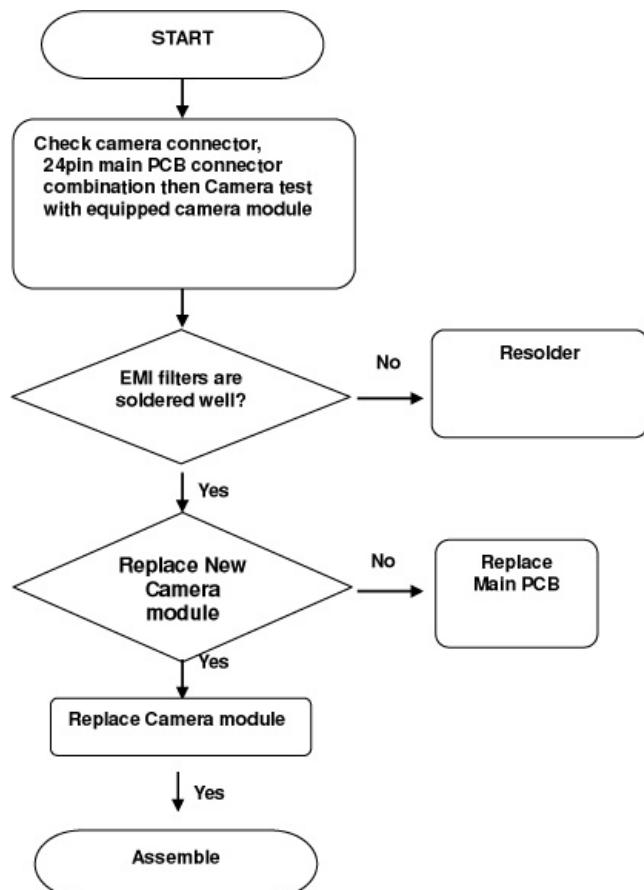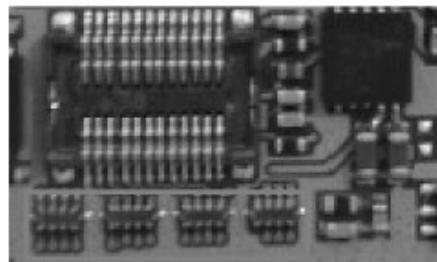
Check Points

Check signal
flow via EMI filter

Check the connector
combination

5.6 Receiver & Speaker trouble

Check Points

-Speaker spring contact

-Audio amp soldering

-analog switch soldering
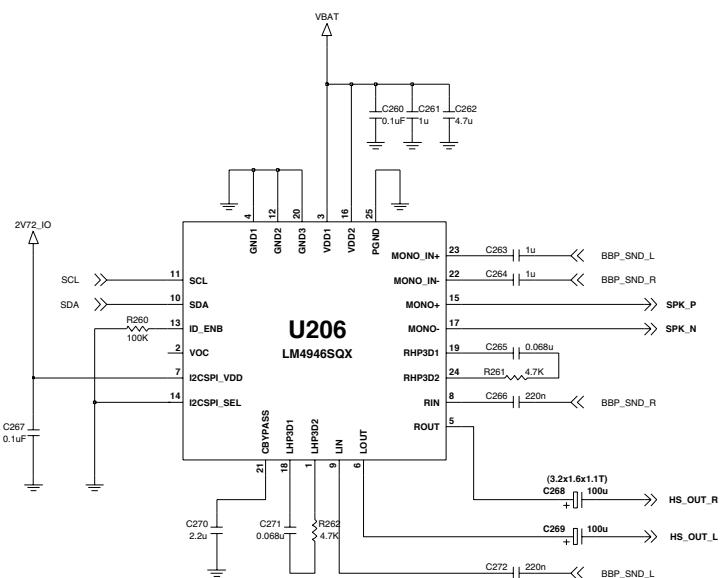
SPK_RCV_SWITCH

(MAIN SPEAKER & RECEIVER PATH Control)

SPK_RCV_SEL	SPK_RCV_P / N Links to
L	RCV_P / N
H	SPK_P / N

START

Check Speaker and Contacts are clear.

Speak is contacted → No → Check soldering

↓ Yes

U206 is working? → No → Replace or Repair it

↓ Yes

U208 is working properly? → No → Resolder or Replace it

↓ Yes

Replace Main PCB

Assemble
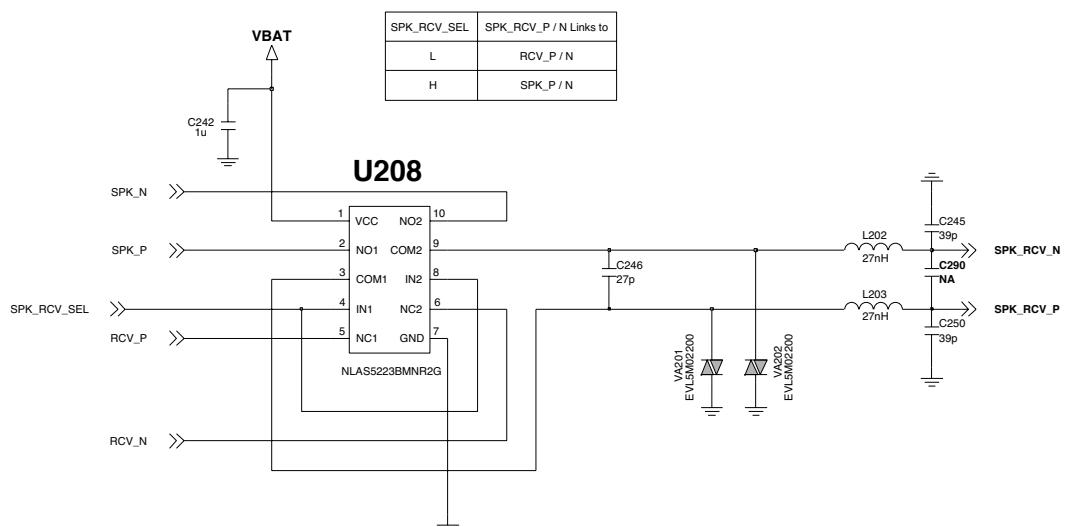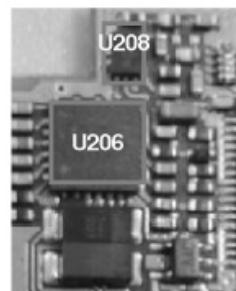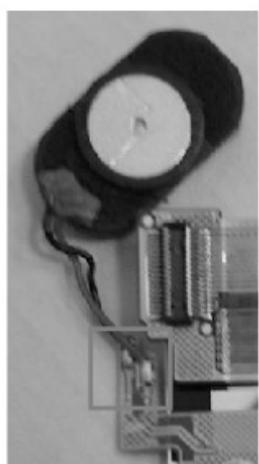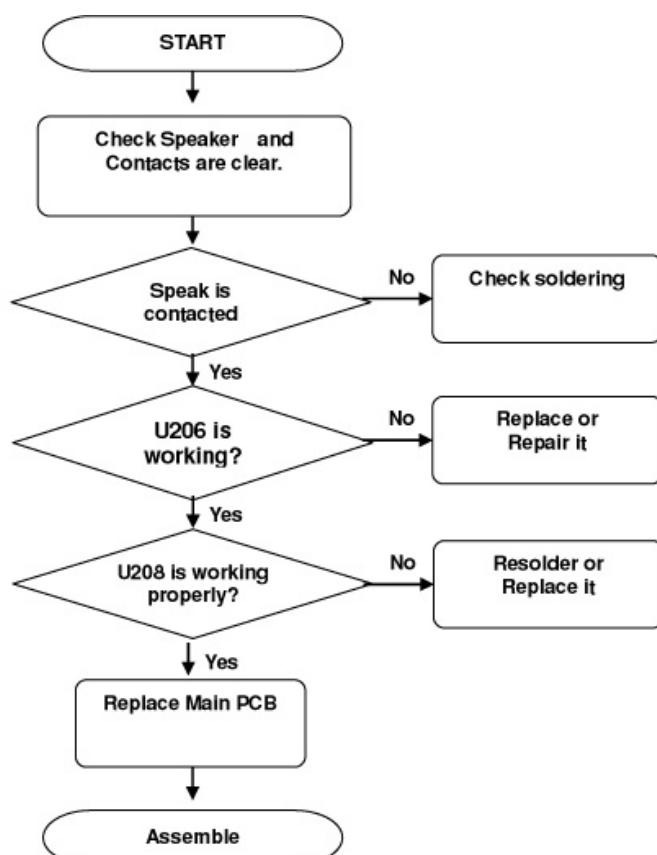
5.7 Microphone trouble

Check Points
-Microphone hole
-Mic. Bias & signal come from

MICROPHONE
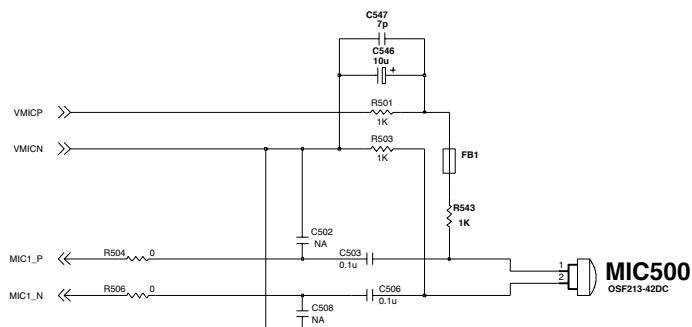
Check solder
related
microphone path

Waveform

START

Check microphone sound hole

Yes

Make a phone call then C137 Mic. Bias come from BBP? (about 2V) — **No** → Check mic. Bias line (VMICP)

Yes

Signal comes out from Microphone — **No** → Replace microphone

Assemble
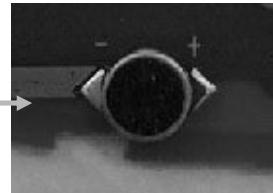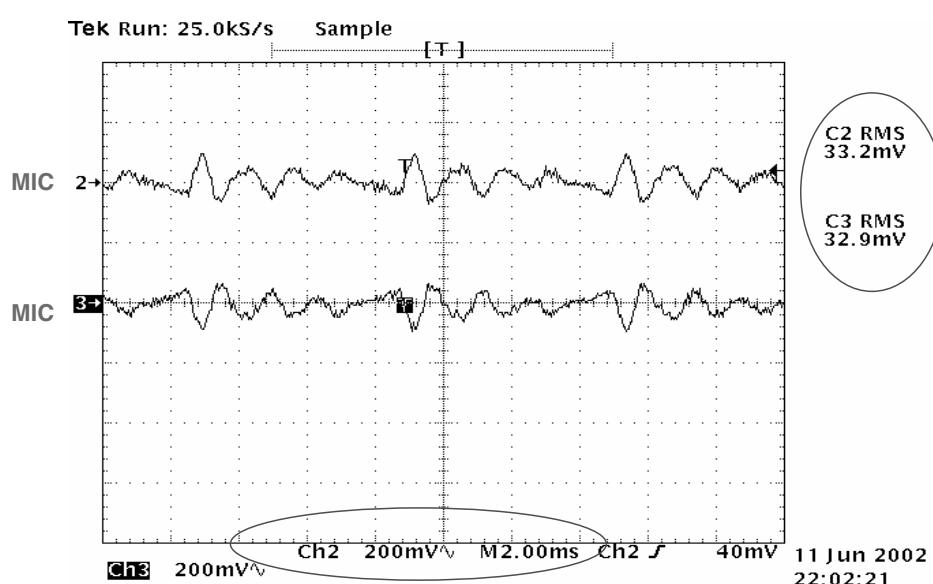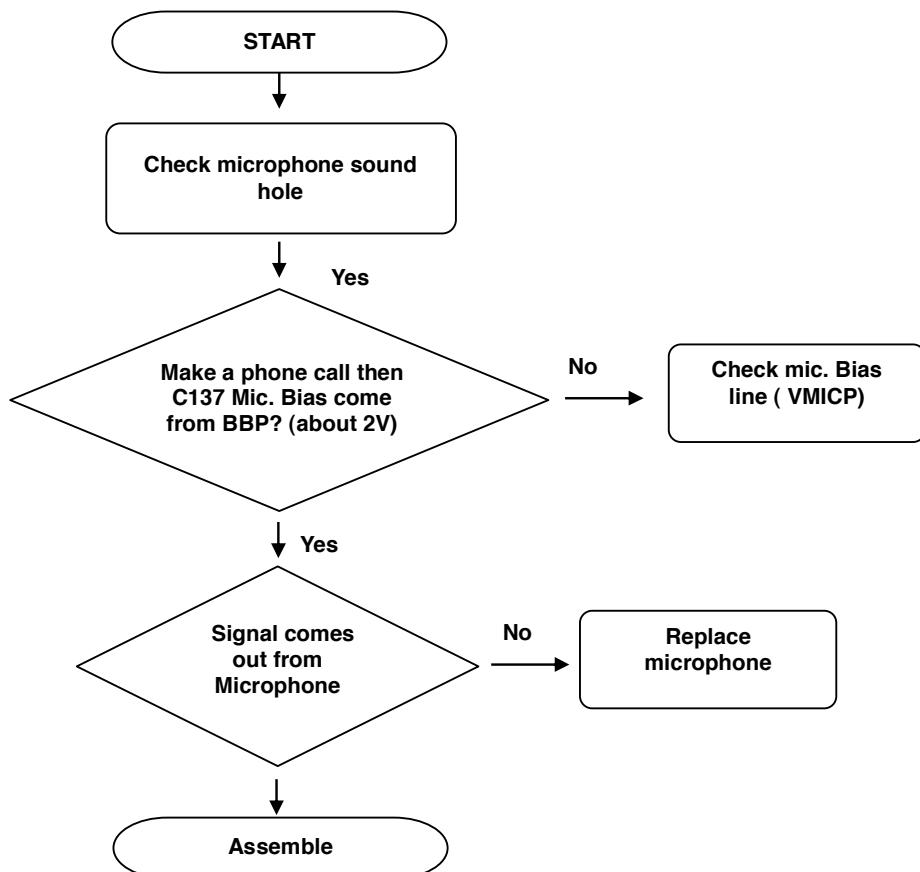
5.8 Vibrator trouble

Check Points
- VCC lines (VBAT)
- Vibrator signal path
- The connection between the main board and vibrator module
The soldering of socket

VIBRATOR CIRCUIT
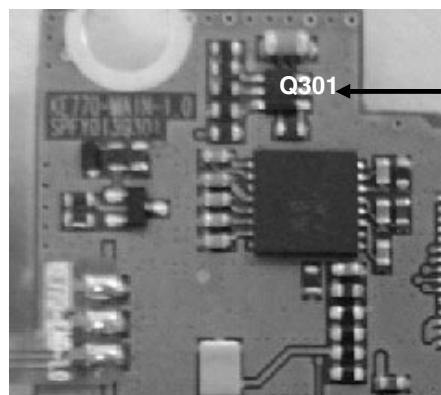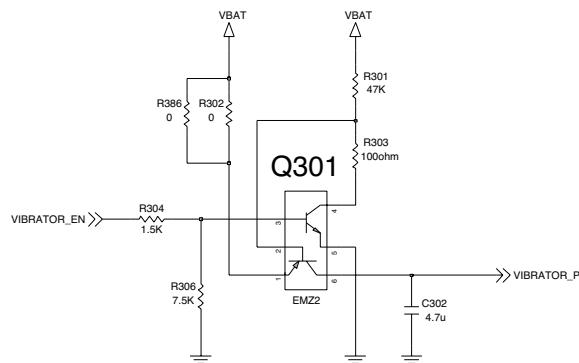
Check the driver IC
Enable signal goes to high then vibration
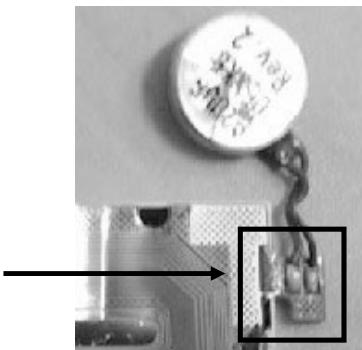
Check the contact is clear, if there is some obstacles then remove them

START

Check Vibrator contact

Is the voltage at pin
3 of Q301 high
(2.5V) ? — No → Check Q301 or replace it

Yes

Check the soldering of
vibrator at LCD — No → Resolder vibrator

Yes

Replace Vibrator

Vibrator will work properly
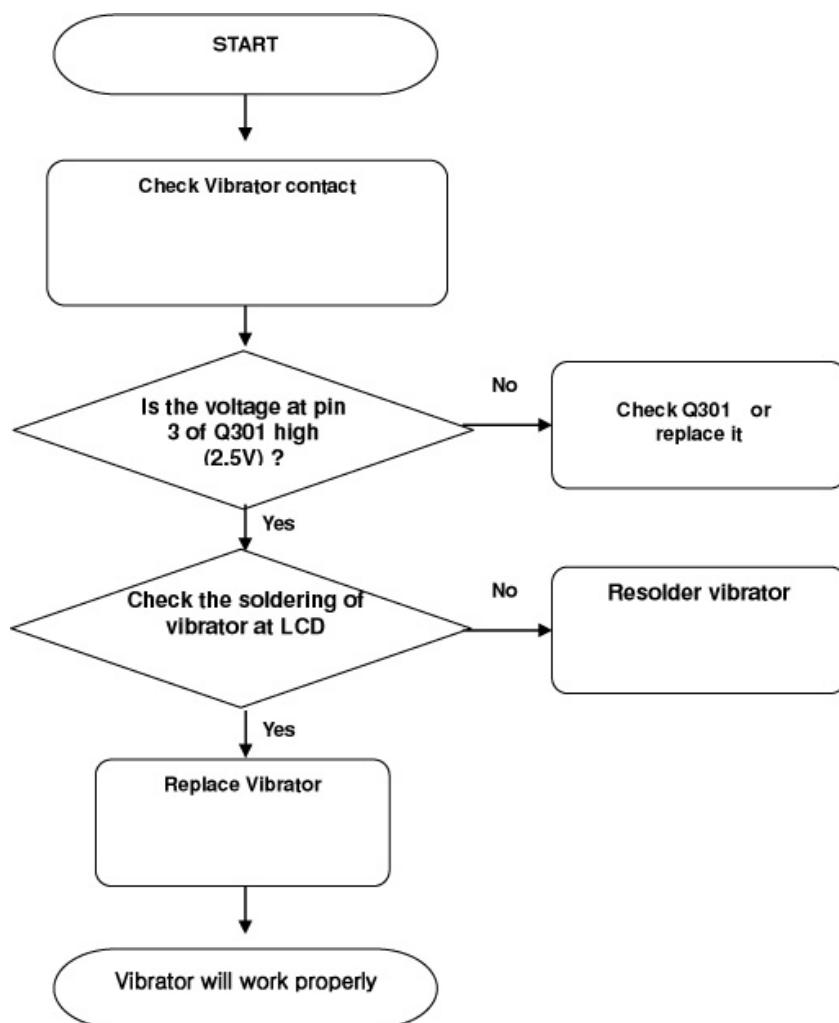
5.9 Keypad back light trouble

Check Points
-Signal path is connected well
-Control IC is working properly

Check LGF_EN (R530) Signal
when Key backlight ON
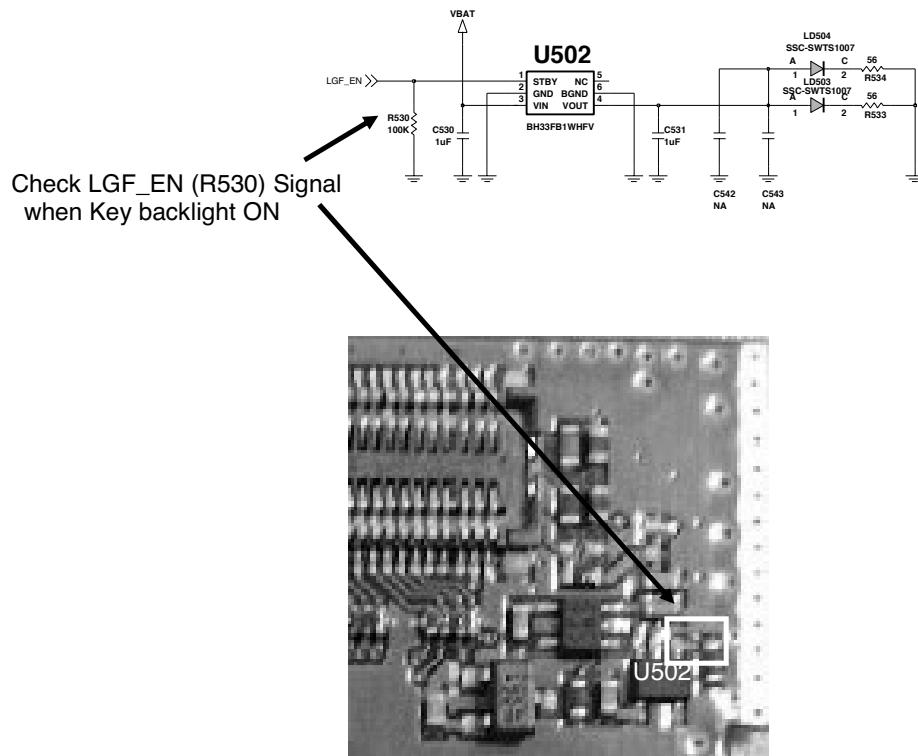
5.10 SIM card trouble

Check Points
-Power control FET is working
-Socket soldering
-Proper SIM is used

**Check soldering
all pin of socket**

5. Trouble shooting

Pin 3 / SIM_CLK

Tek PreVu

Δ: 3.08 V
@: −60.0mV

Ch2 Freq
3.250MHz

Ch2 High
3.08 V

Ch2 Freq
3.250MHz

Ch2 1.00 V   M 200ns   Width   Ch2

28 Mar 2006
14:08:59

−472.000ns

```
            ┌─────────────────┐
            │      START       │
            └────────┬────────┘
                     │
    ┌────────────────▼───────────────┐
    │  Check All of SIM card voltage  │
    │         KE770 support           │
    │       1.8V & 3V SIM only        │
    └────────────────┬───────────────┘
                     │
              ╱──────▼──────╲                      ┌──────────────┐
             ╱  6 pins are    ╲        No          │              │
             ╲  soldered well? ╱──────────────────▶│  Repair it   │
              ╲──────┬──────╱                      └──────────────┘
                     │ Yes
              ╱──────▼──────╲                      ┌──────────────┐
             ╱ When _SIM_EN   ╲       No           │ Replace the  │
             ╲ is low SIM_IO   ╱──────────────────▶│   damaged    │
              ╲ signal is ok? ╱                     │    part      │
               ╲─────┬─────╱                       └──────────────┘
                     │
            ┌────────▼────────┐
            │    Assemble     │
            └─────────────────┘
```
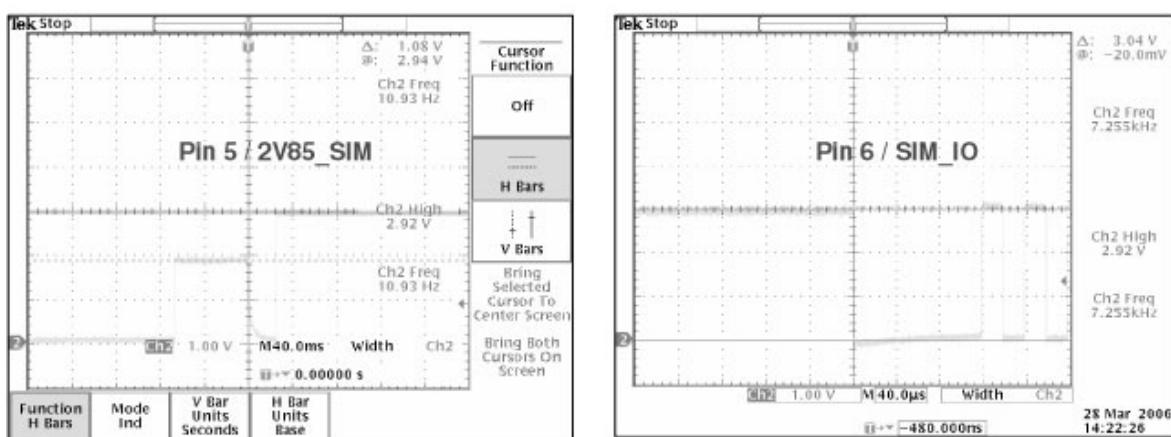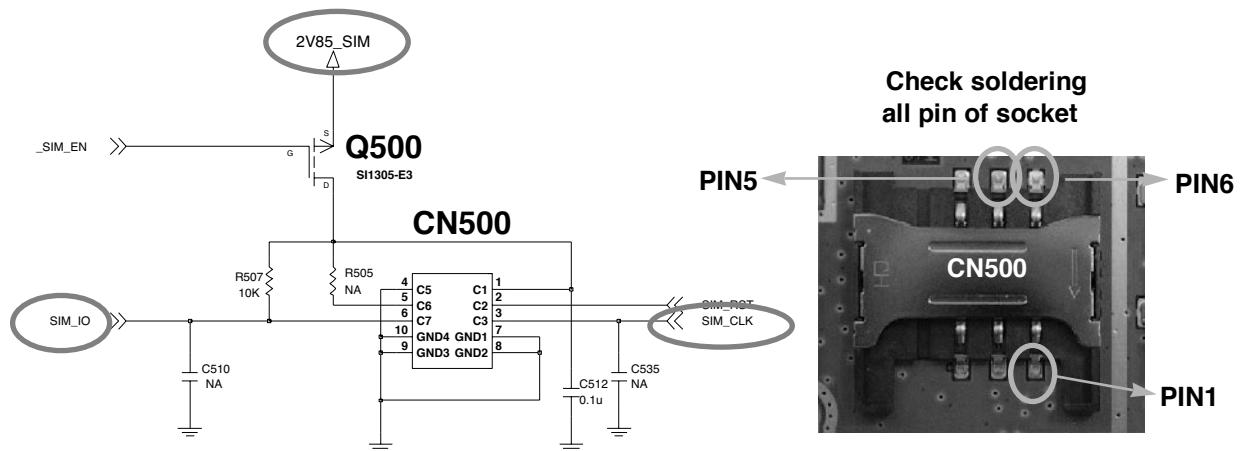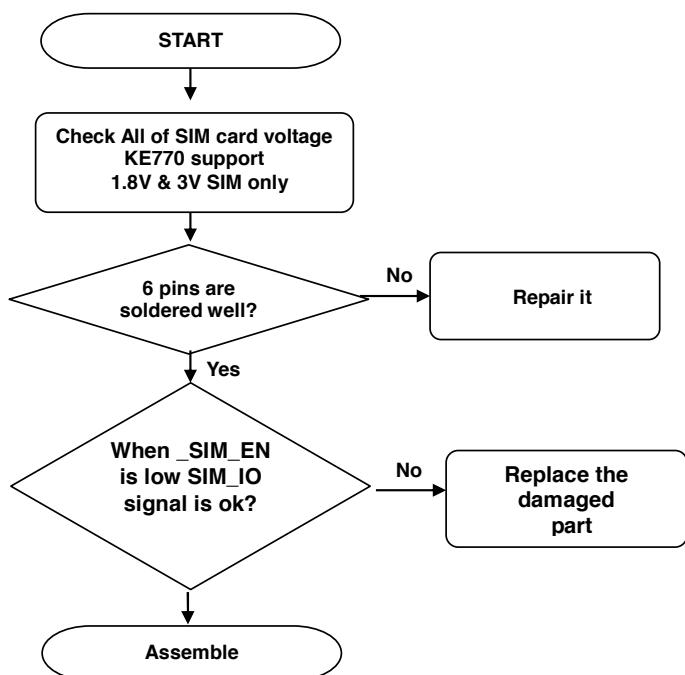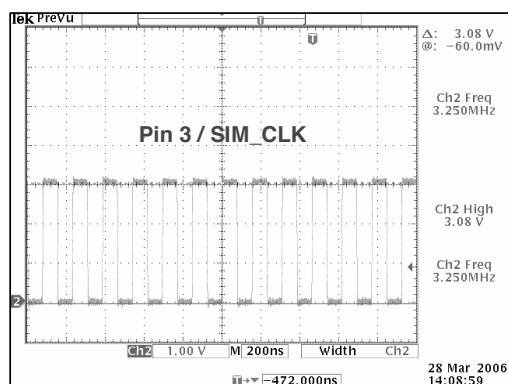
5.11 MicroSD trouble

Check Points

-Power control LDO is working

-Socket soldering

-Card detect is working

TRANS-FLASH (CONNECTOR) PART

TF_DETECT : Card insert

TF_DETECT : Card eject
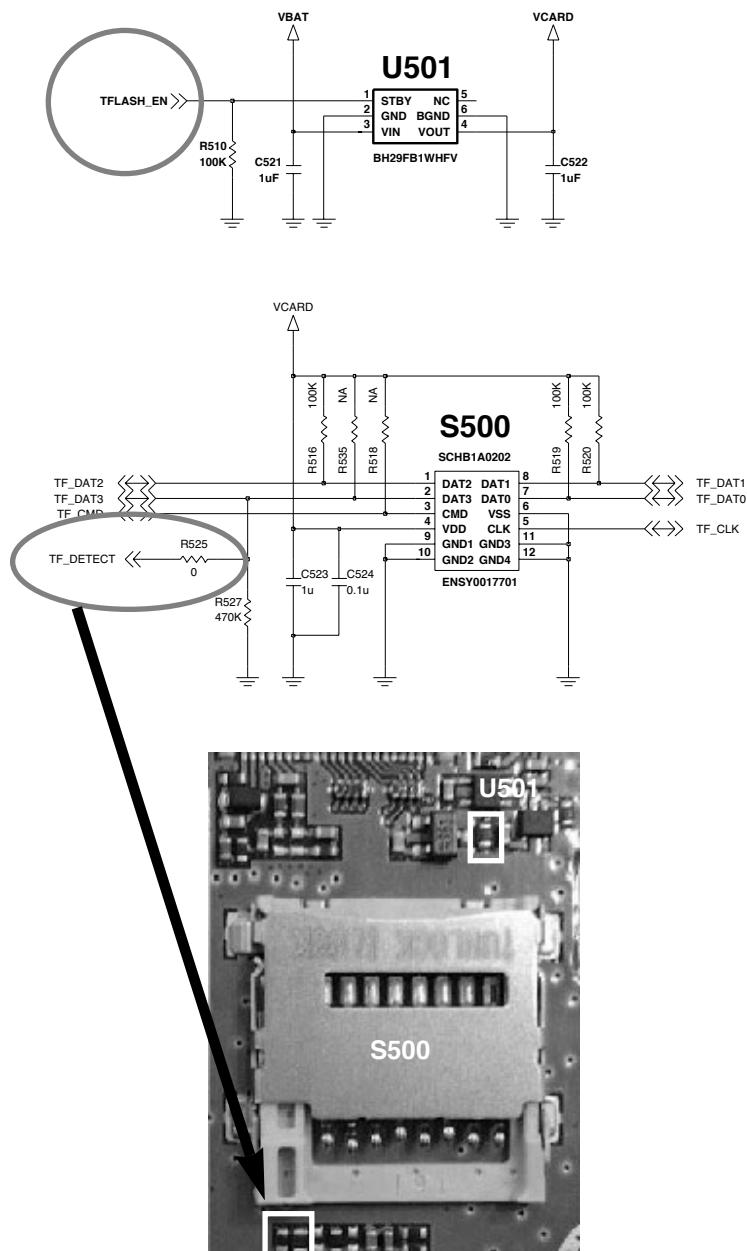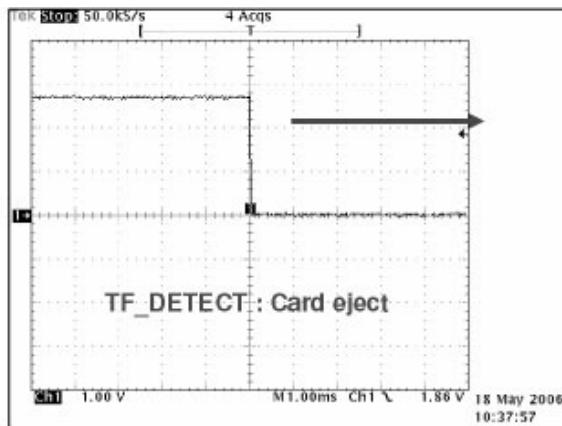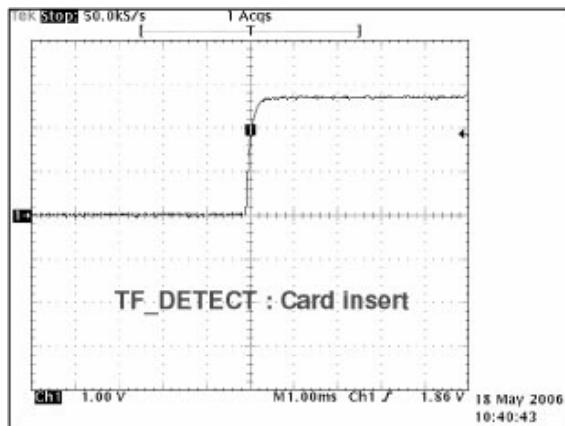
5.12 RF PART TROUBLESHOOTING

5.12.1 RF Components
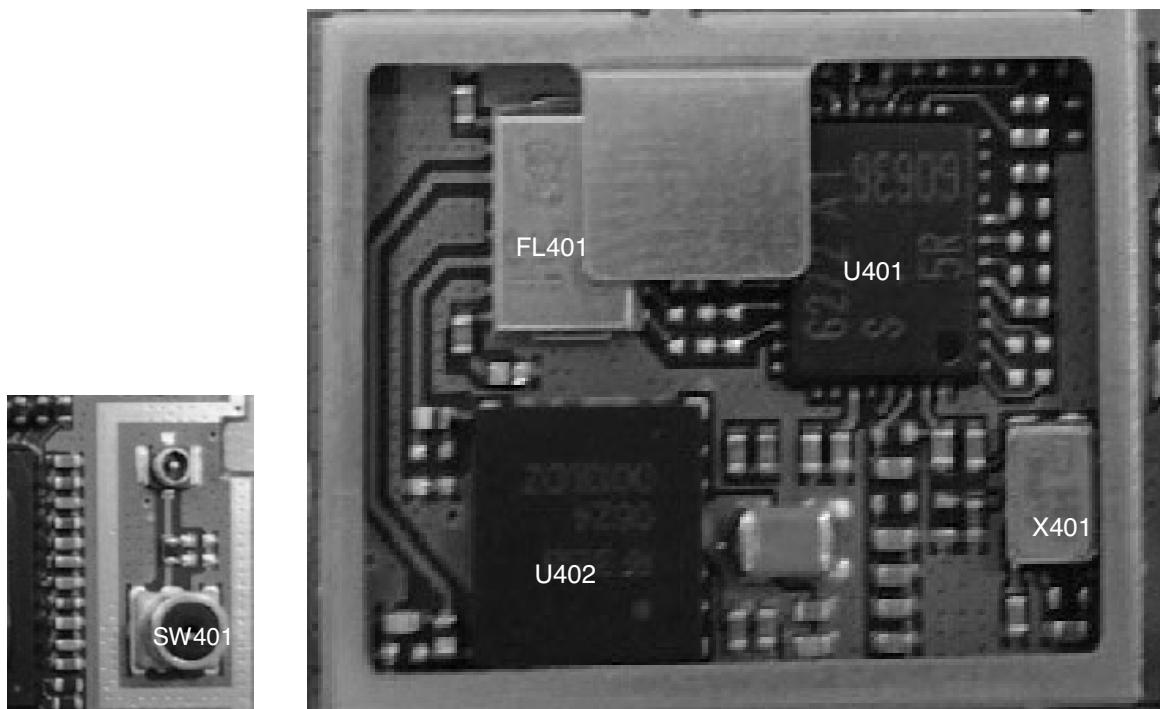
REFERENCE	PART Description
U402	PAM (Power Ampilifier Module)
X401	VCTCXO (26MHz)
FL401	FEM (Front End Module)
U401	Transceiver
SW401	Mobile Switch

Table 1. RF Components

5. Trouble shooting

5.12.2 TX Troble

Test Points

Checking Flow

	VC1	VC2
PGSM/EGSM_Tx	H	L
DCS/PCS_Tx	L	H
PGSM_Rx	L	L
EGSM_Rx	L	L
DCS_Rx	L	L
PCS_Rx	L	L
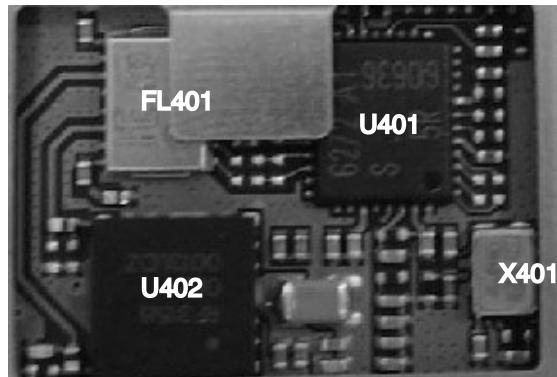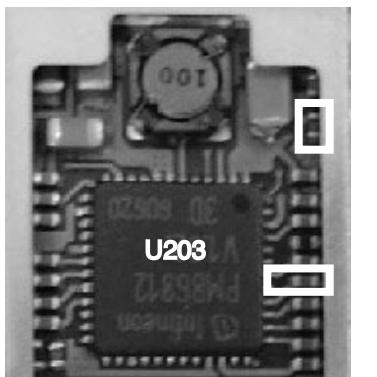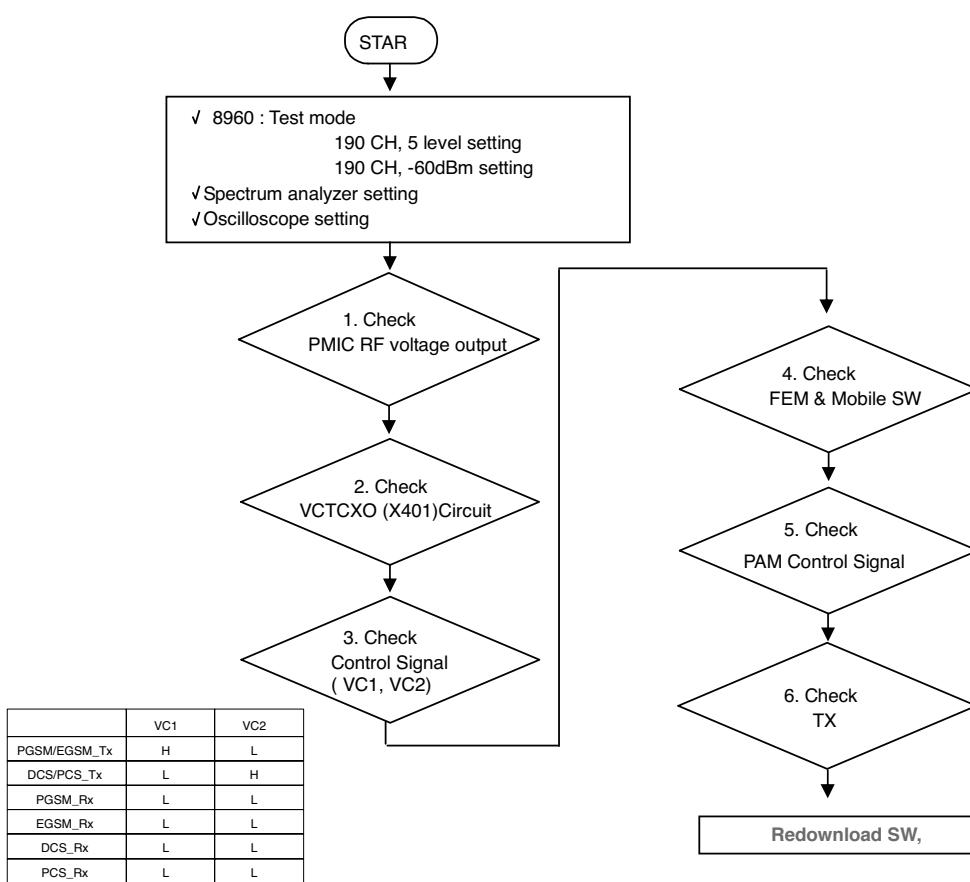
5.12.3 Regulator Circuit

Circuit Diagram

PMIC & Li-ion CHARGER
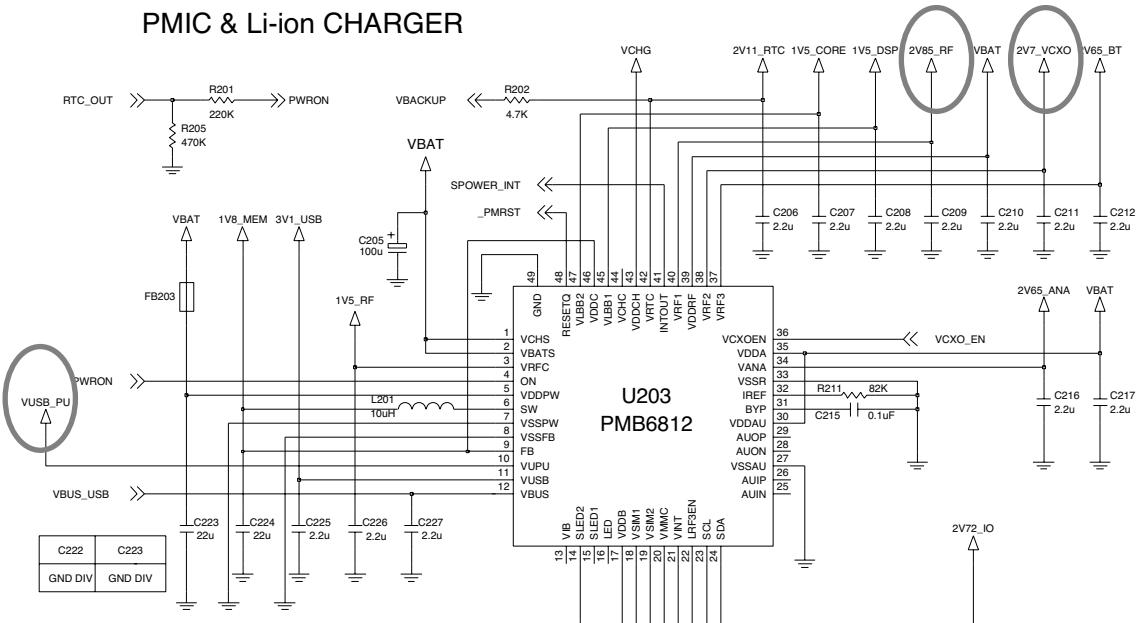
Figure 4-8

Test Points
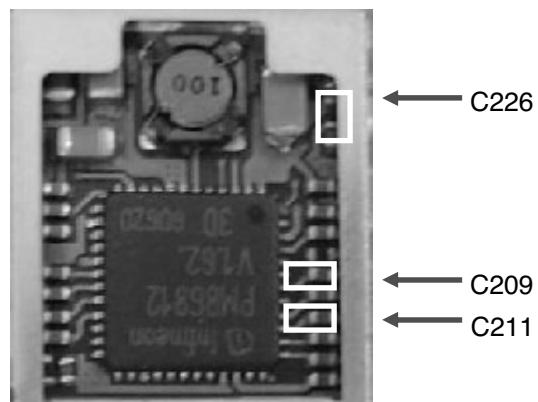
5. Trouble shooting

Checking Flow

```
Check c226          Yes    Check C209       Yes    Check C208       Yes    Go to next page
RF 1.5V    ───────────>    RF 2.85V   ───────────>  RF 2.7V   ───────────>
   │ No                       │ No                     │ No
   ▼<──────────────────────────┴───────────────────────┘

Check C217          Yes    Replace U201
Vbat       ───────────>
   │ No
   ▼
Changing the Board
```
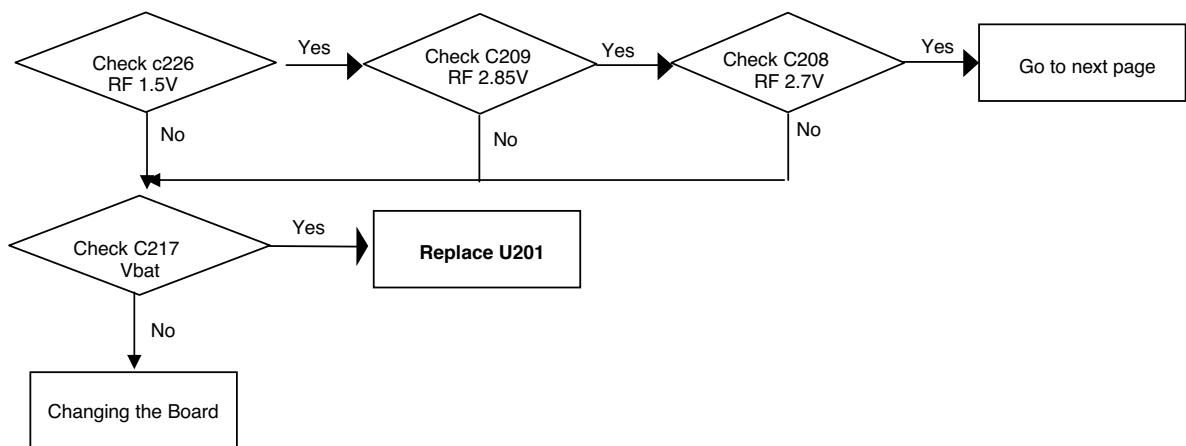
5.12.4 VCTXO Circuit

Test Points

Pin 3

Pin 1

Figure 4-9

Checking Flow

Check Pin 3.
Refer to Graph → 26 MHz O K? → Yes → **VCTCXO Circuit is OK See next Page to check ANT SW & Mobile SW**

No ↓

Check Pin 4 → 2.7V OK? → Yes → **Changing X401**

No ↓

check C430 ok? → No → **Re soldering R505**

Yes ↓

Change the board
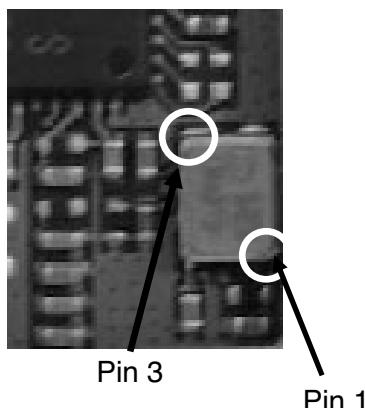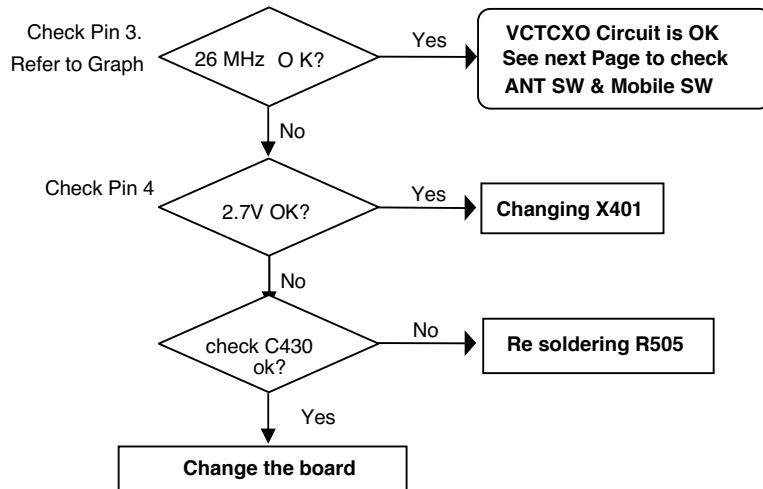
Waveform

Circuit Diagram

2V7_VCXO

X401

3 OUT VCONT 1
4 VCC GND 2
26MHz

C430
1u

C431
22p

R413
0

AFC
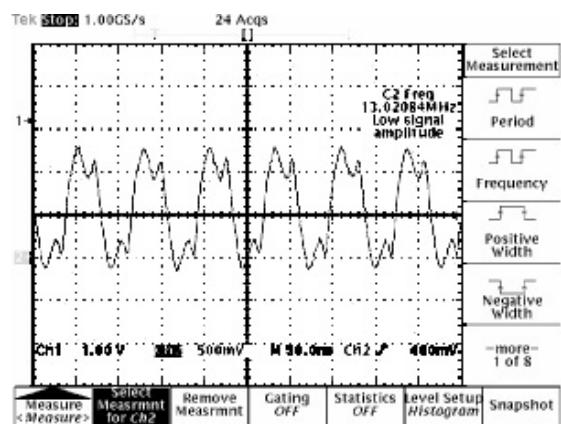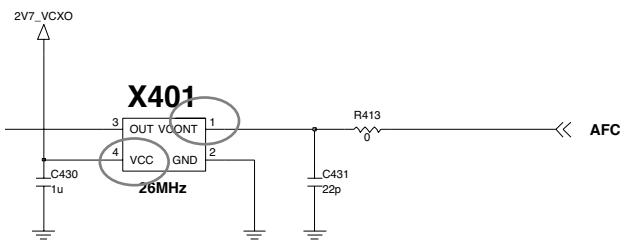
5.12.5 FEM & Mobile SW

Test Points
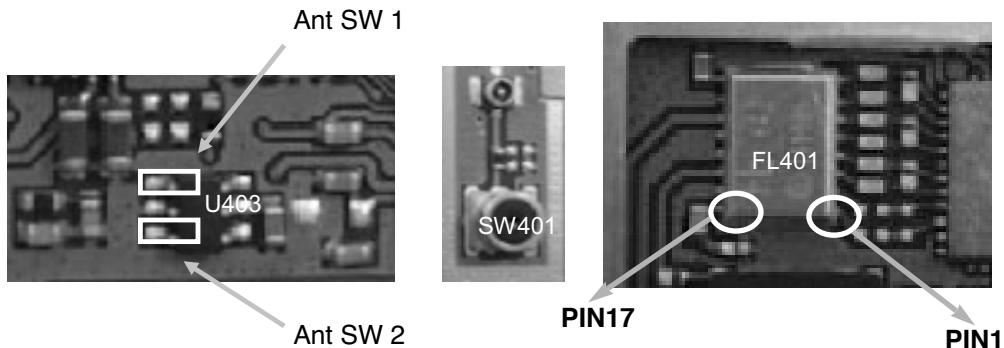
Figure 4-10

Circuit Diagram

MAIN PCB_BOTTOM SIDE

	VC1	VC2
PGSM/EGSM_Tx	H	L
DCS/PCS_Tx	L	H
PGSM_Rx	L	L
EGSM_Rx	L	L
DCS_Rx	L	L
PCS_Rx	L	L

Checking Flow

```
           ┌─────────────────────┐
           │    Check SW401      │
           └─────────────────────┘
                      │
                      ▼
              ╱─────────────╲                    ┌─────────────────────┐
             ╱  Signal is OK ?╲────No───────────▶│  Replace Mobile SW  │
              ╲─────────────╱                     │      (SW401)        │
                      │ Yes                        └─────────────────────┘
                      ▼
           ┌─────────────────────┐
           │   Check Pin A1,A2    │
           │     of U403?        │
           └─────────────────────┘
                      │ Yes
                      ▼
              ╱─────────────╲                    ┌─────────────────────┐
             ╱ Control Signal is╲───No──────────▶│  Check PMB8876 (U103)│
              ╲    OK?        ╱                   └─────────────────────┘
                      │ Yes
                      ▼
              ╱─────────────╲                    ┌─────────────────────┐
             ╱ 1 ~ 8 ,12,15 pin╲──No────────────▶│  Replace FEM (FL601) │
              ╲ of FL401 OK?  ╱                   └─────────────────────┘
                      │ Yes
                      ▼
           ┌─────────────────────┐
           │ Mobile SW & FEM is OK.│
           │See next page to check I/Q│
           │      Signals.       │
           └─────────────────────┘
```
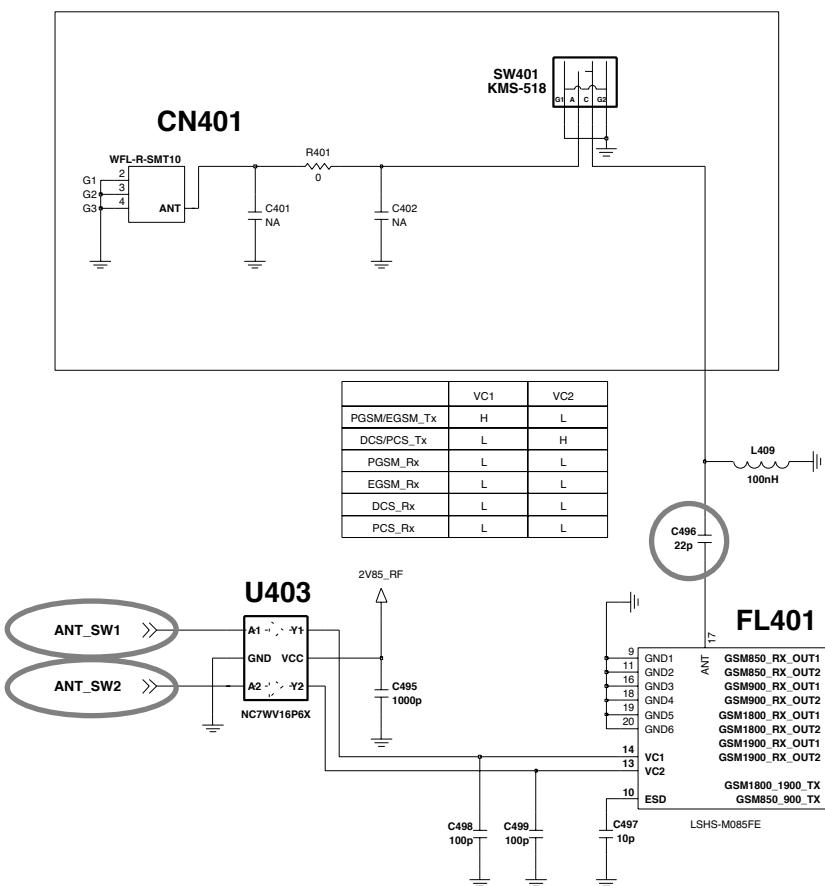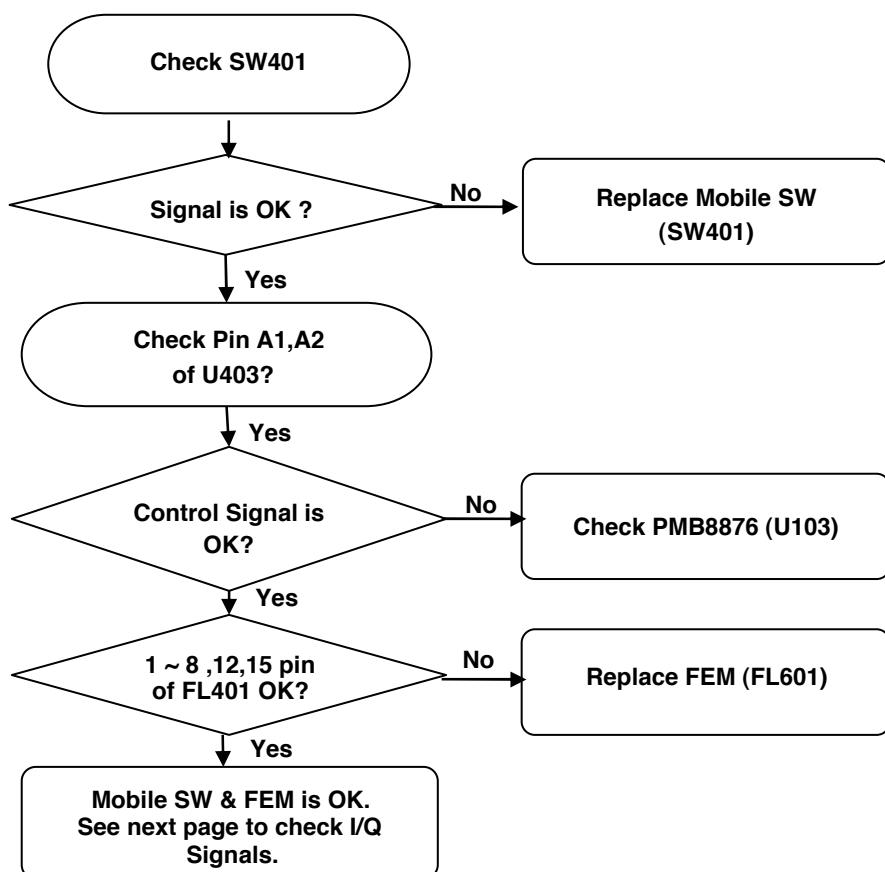
5.12.6 PAM
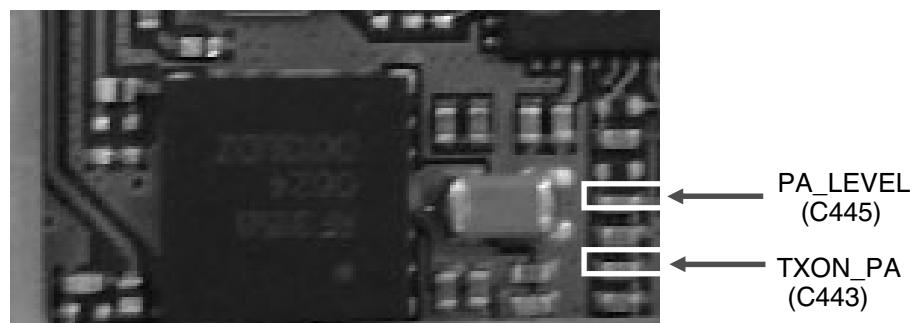
Test Points

Figure 4-12

Waveform
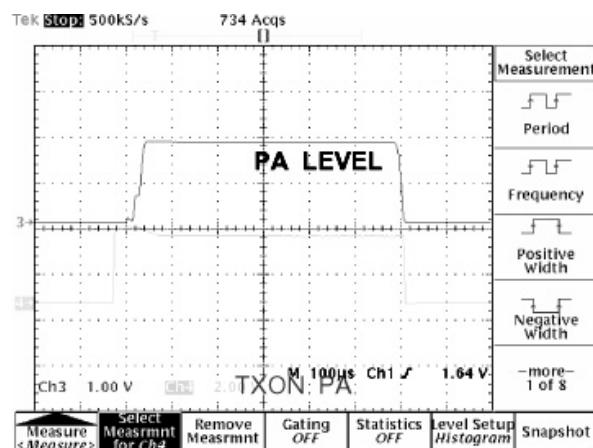
Graph 4-8

Checking Flow

Check PA_LEVEL,TXON_PA

Check if there is

Any Major Difference or not
Refer to Graph 48.

Similar?

No → **Download S/W**

Yes

Go to Next Step
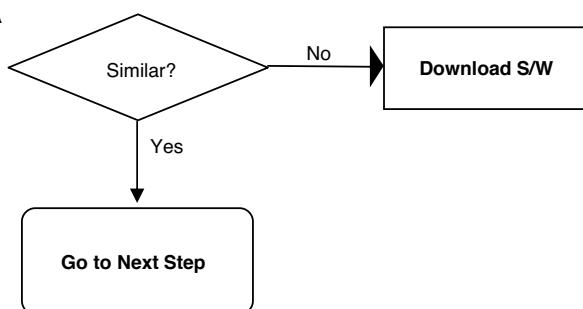
5.12.7 TX IQ
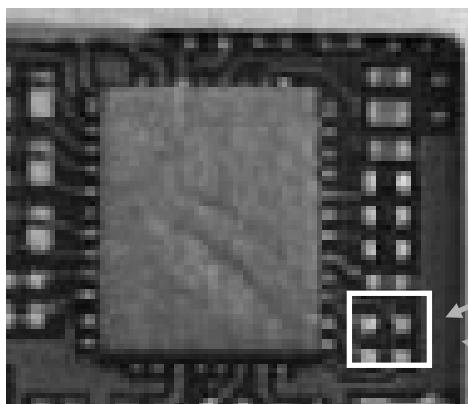
Test Points	Circuit Diagram
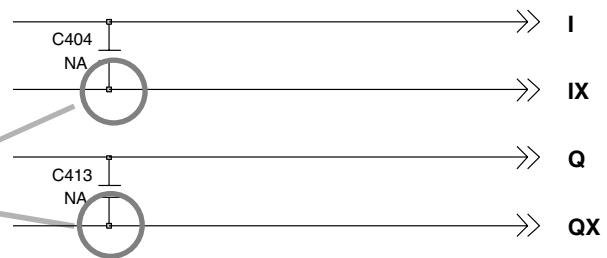
Figure 4-13

Waveform
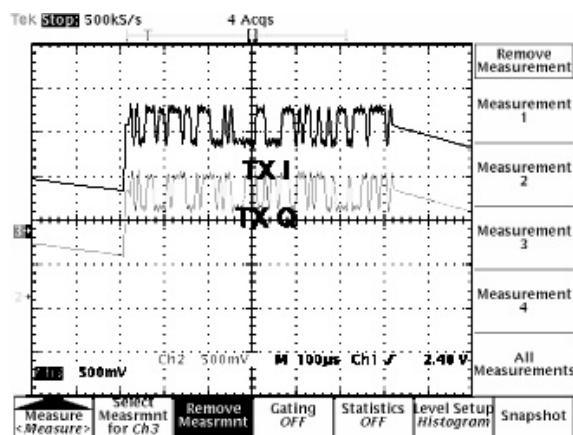
Graph 4-9

6. Download & S/W upgrade

6.1 S/W download setup
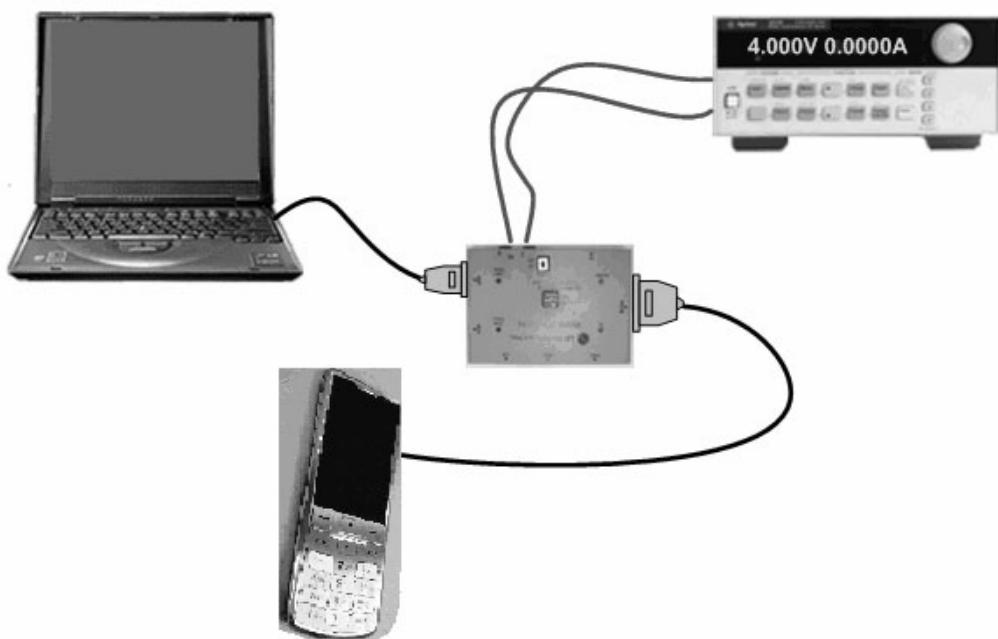
Figure S/W download & upgrade setup

Preparation
• Target terminal
• PIF-Union
• RS-232 Cable and PIF-UNION to Phone interface Cable
• Power Supply or Battery
• IBM compatible PC supporting RS-232 with Windows 98 or newer.

If you are going to use battery, the voltage of the battery should be over 3.7V for stable power supplying during S/W download.

6.2 Download program user guide

Execute Flashtool program, then below window will be appeared.
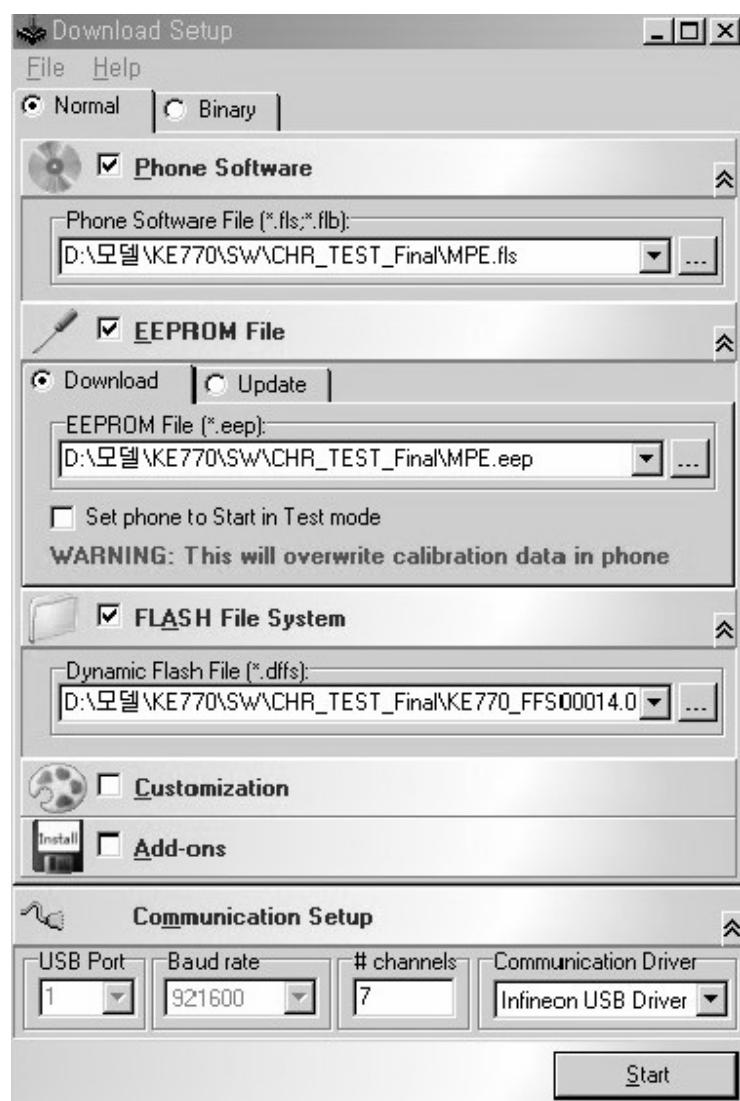
6. Download & S/W upgrade

When the application is started first time the following screen appears.
Each section is described in the text below.

Click the check box to enable or disable file download.
This will open a normal file select box. Select the wanted file.
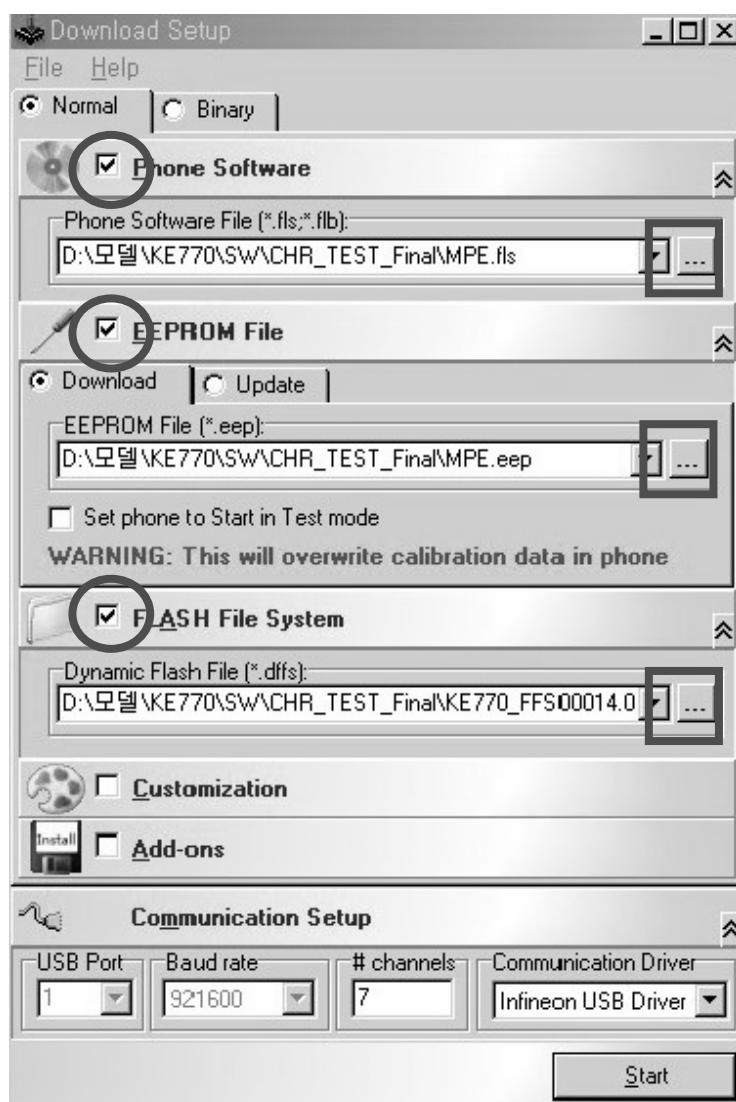
Click on the blue text to select the COM port.
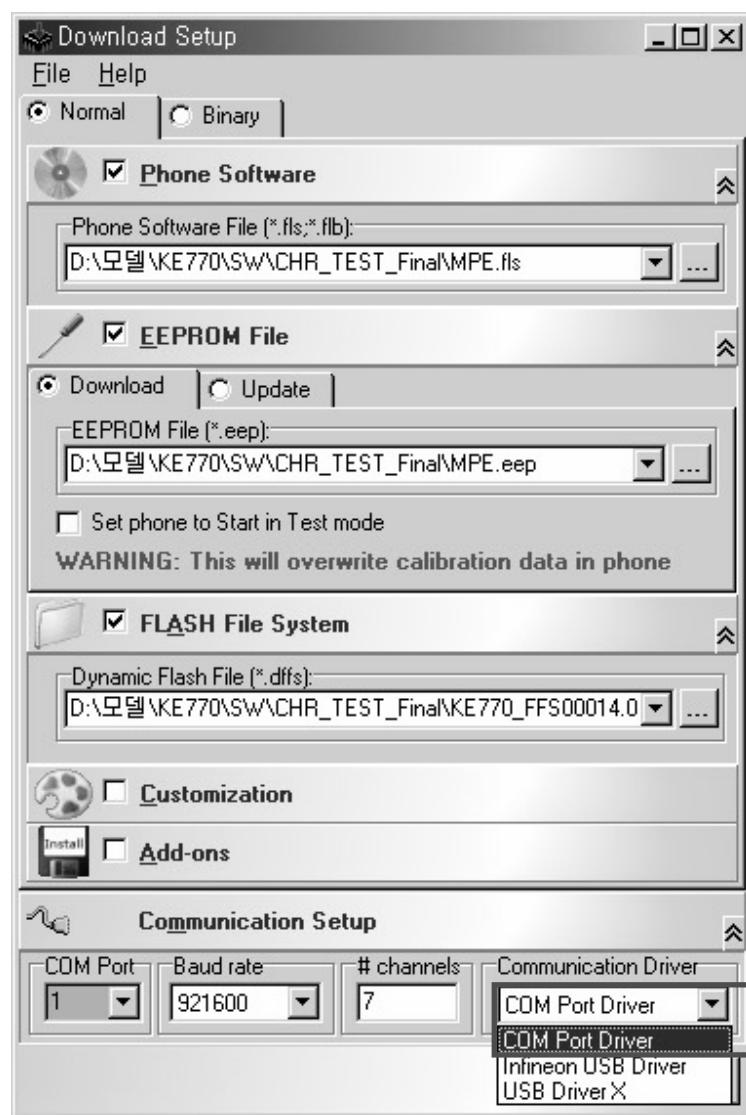
Will change the window as below
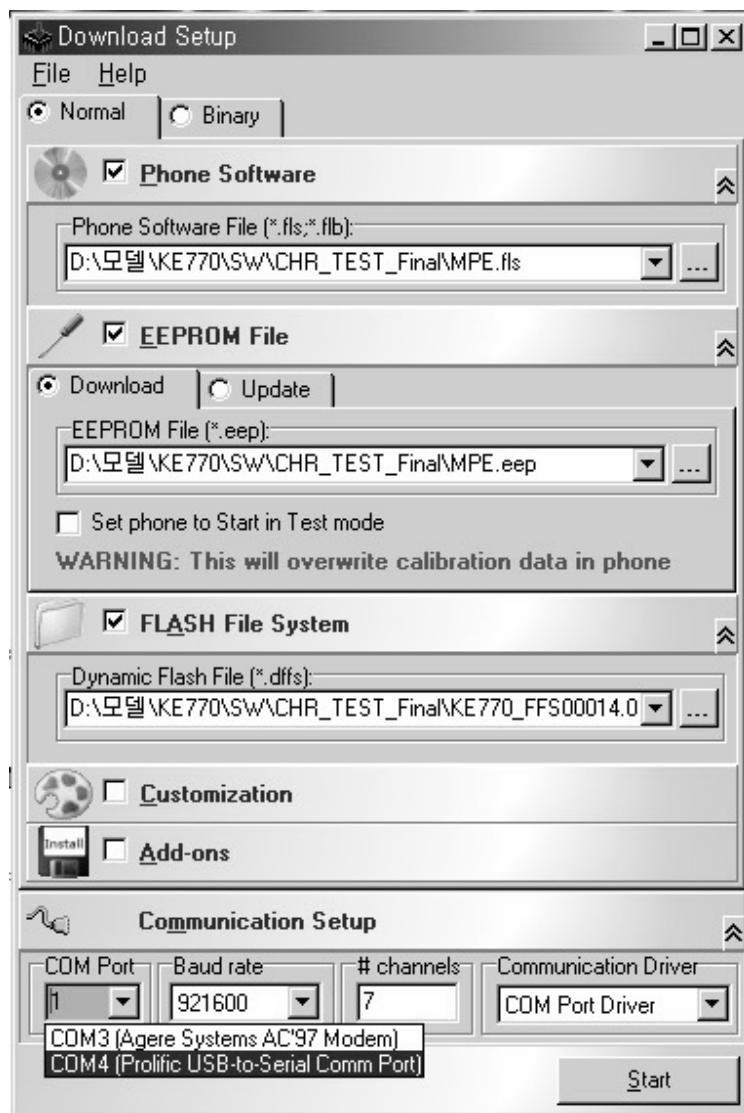
Click on the blue text to select the COM Port.
Click Start button to next step.
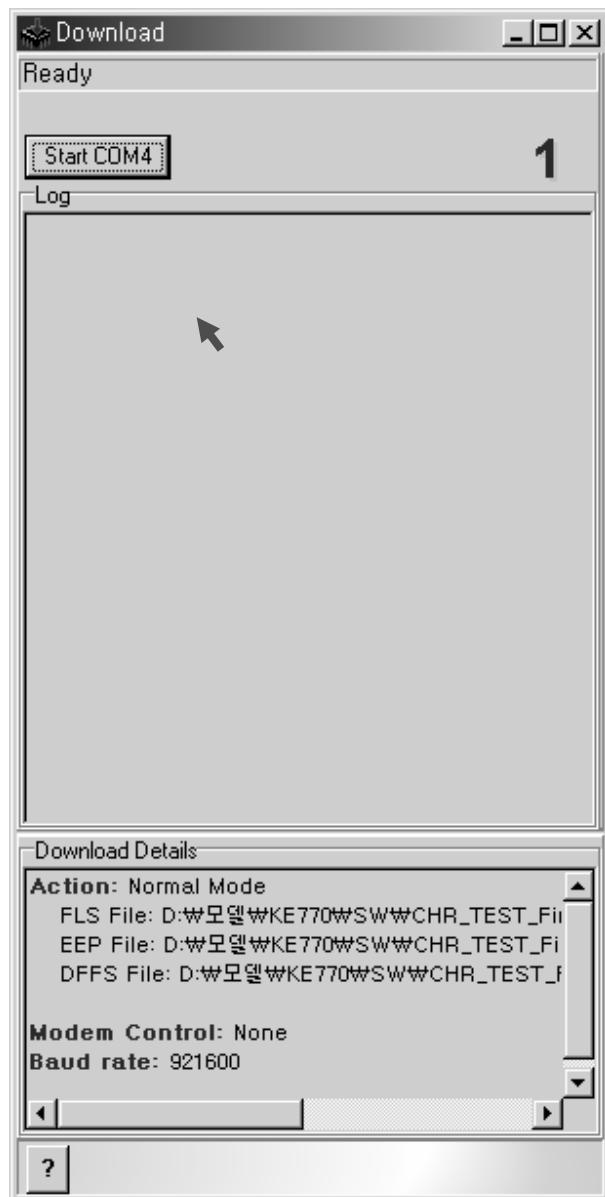
Click to Start COM4
Then remote power on the target phone

6. Download & S/W upgrade

During download, the screen will look something like this:

The blue bar shows the download progress
The FLS filename and the expected checksum are shown.
The download statistics are shown.
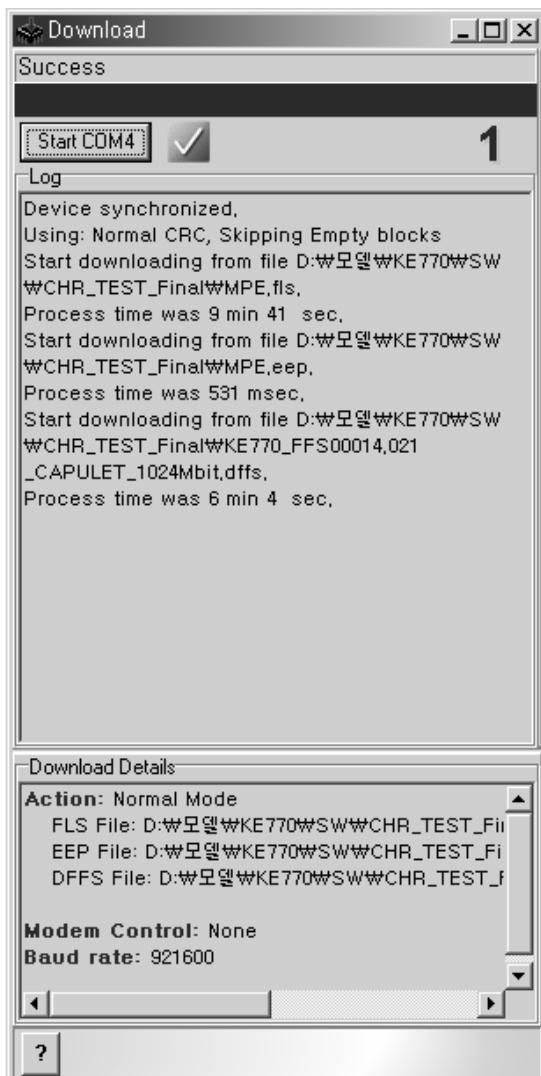
After download, the status is shown.
If there is a need to stop the download process, click on the panel for the channel to be stopped.
To stop the download the panel must be clicked twice.
This is to avoid that the download is stopped accidentally.
Furthermore, to avoid that the download is stopped on a mouse double-click, there must be at least 0.5 second between the two clicks.
If the panel is clicked only once, the text "Click again to stop" will disappear and the download will continue.

7. CIRCUIT DIAGRAM

MAIN PROCESSOR

U103
PMB8876

INTEL MEMORY

ON BOARD ARM9 JTAG & ETM INTERFACE

7. CIRCUIT DIAGRAM

PMIC & Li-ion CHARGER

LCD BACKLIGHT & CAMERA FLASH LED DRIVER

BATTERY CURRENT MONITOR

POWER ON
(REMOTE / END_KEY)

BACK UP BATTERY
(2V, 0.5mAh, Lithium, 1.67T)

EXTERNAL RESET

END KEY

AUDIO AMP SUB SYSTEM & SIGNAL DISTRIBUTOR

MULTI-PORT SWITCH-1

SPK_RCV_SWITCH
(MAIN SPEAKER & RECEIVER PATH Control)

SPK_RCV_SEL	SPK_RCV_P / N Links to
L	RCV_P / N
H	SPK_P / N

LG Electronics

TITLE: KE770
(AUDIO, PMIC, CHARGE PUMP ETC)

REV: 1.0

7. CIRCUIT DIAGRAM

2M FF CAMERA I/F CONNECTOR
(24PIN, SOCKET)

VIBRATOR CIRCUIT

MAIN PCB & SUB PCB INTERFACE CONNECTOR

CAM Power ON/OFF Sequence

LCD CONNECTOR (34 PIN, SOCKET)

CHARGIING IC

MULTI-PORT SWITCH 2

BLUETOOTH

CAMERA POWER

18PIN MUILTIPORT RECEPTACEL

BT FIFA ANT

LG Electronics

TITLE:
KE770
(Bluetooth, Charging, Switches, Connectors etc)

Size: A3

REV: 1.0

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7. CIRCUIT DIAGRAM

7. CIRCUIT DIAGRAM

KEY_PCB PART

MICROPHONE

SIM CONNECTOR

MAIN to KEY PCB INTERFACE CONNECTOR
(SOCKET)

CN501

KEY BACKLIGHT LED

TRANS-FLASH (CONNECTOR) PART

U501

S500

KEY PAD PART

VOLUME AND CAMERA KEY

CN502

ANTENNA COAXIAL CABLE CONNECTOR

CN503

LG Electronics

TITLE:
CMW_BAR : KEY_PCB
(EL, T-FLASH, SIM, MIC Etc)
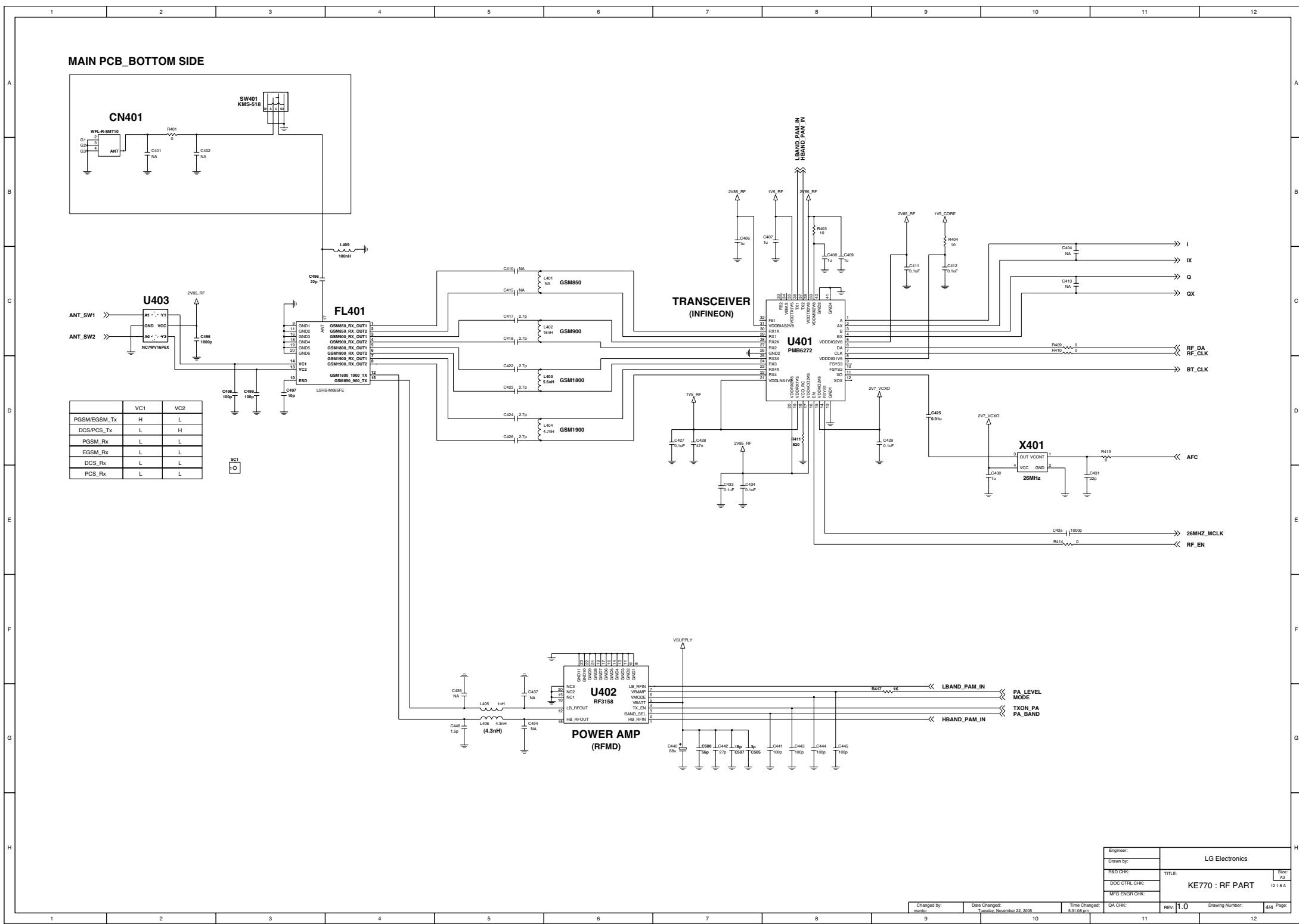
8. PCB LAYOUT
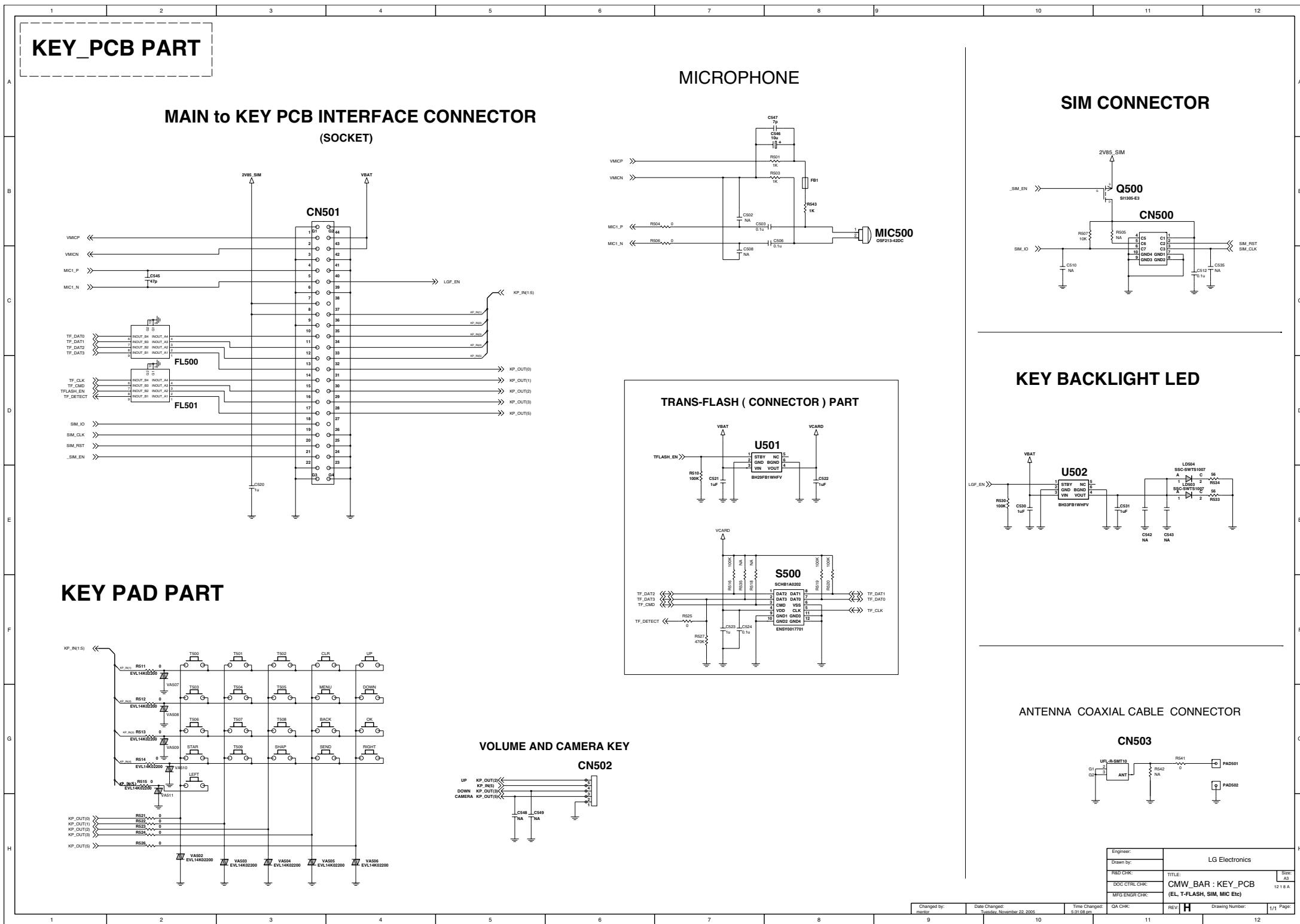
KE770-SPFY0139301-1.1-TOP
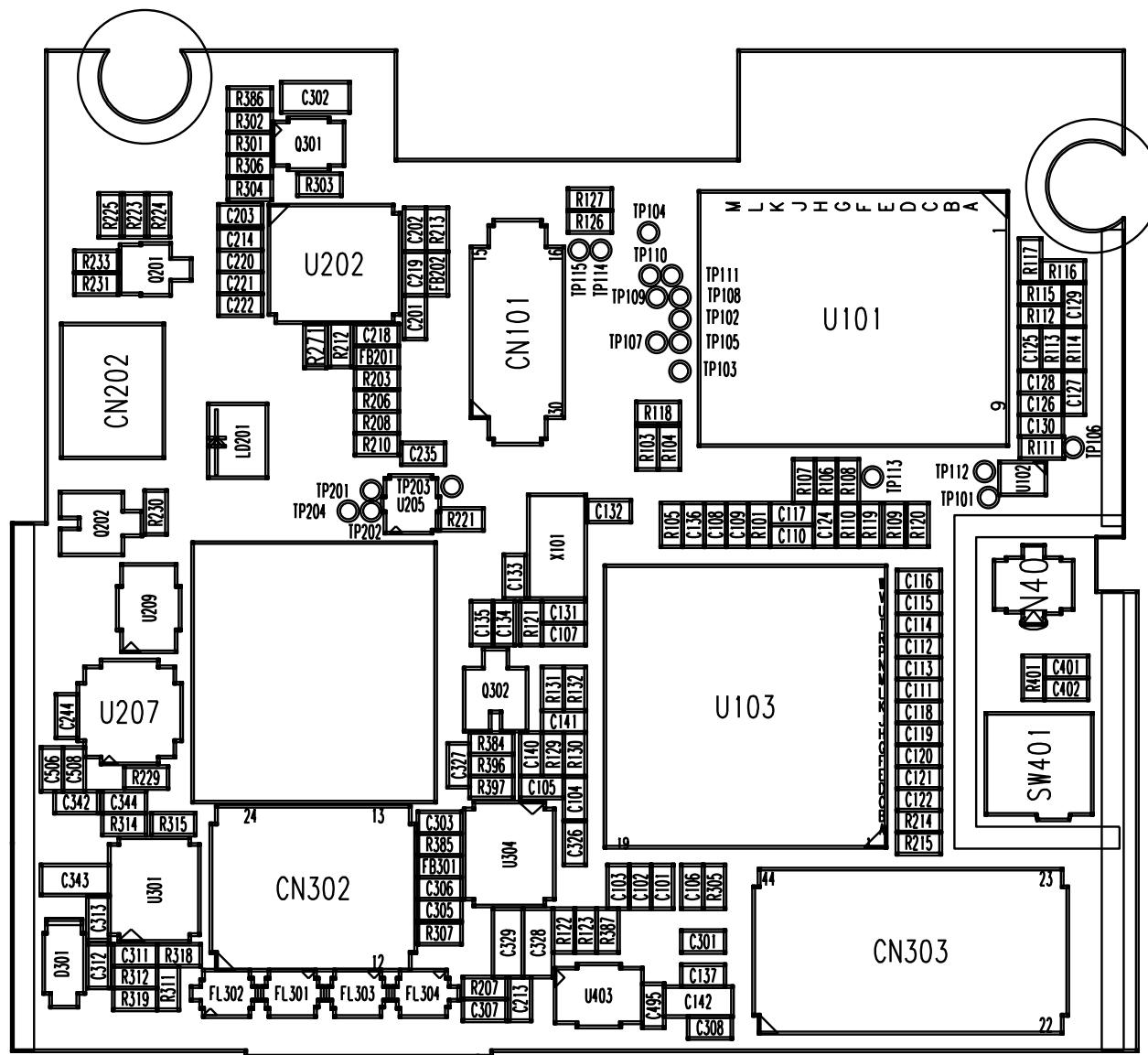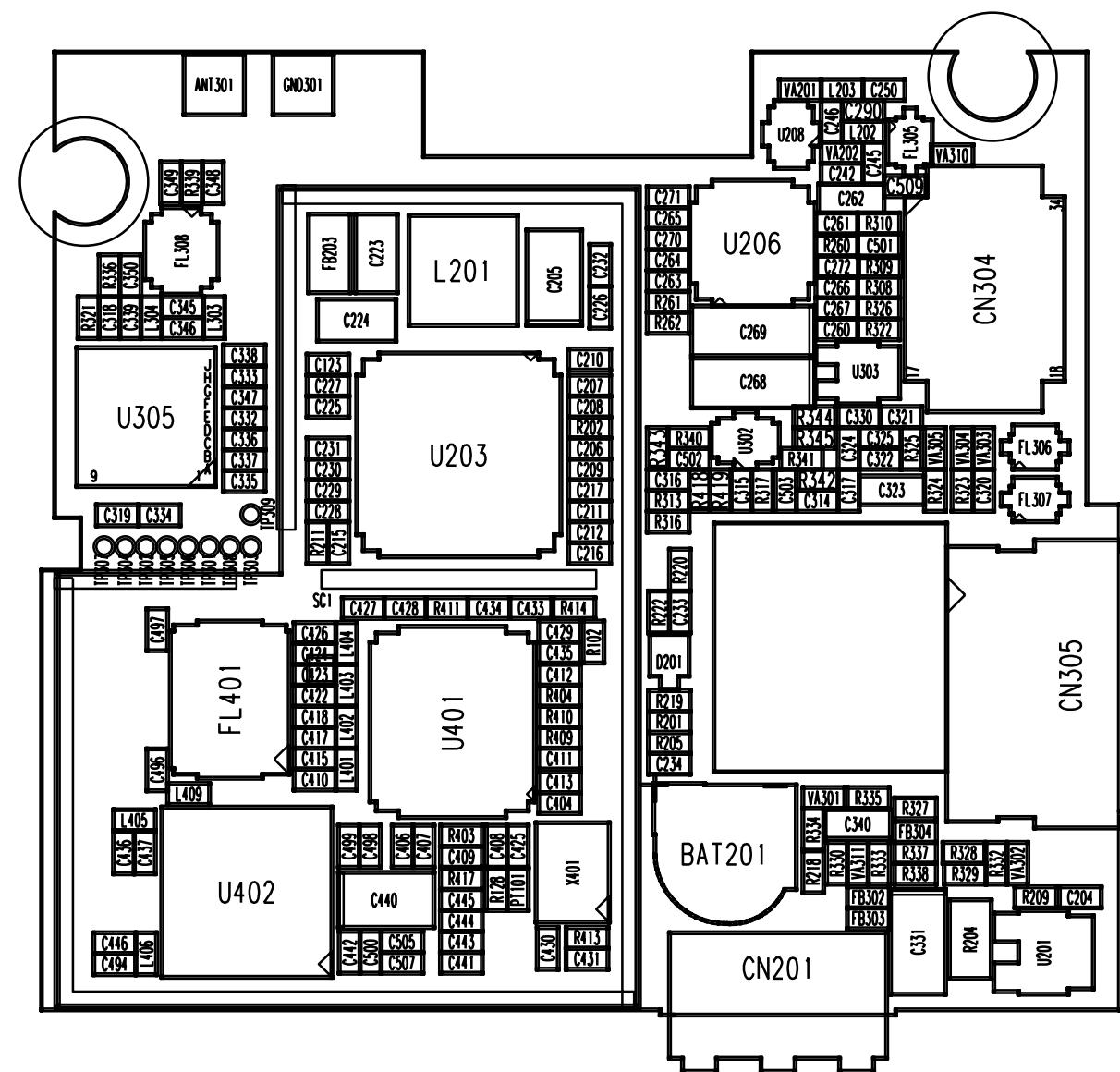
8. PCB LAYOUT

KE770-SPFY0139301-1.1-BOTTOM

8. PCB LAYOUT
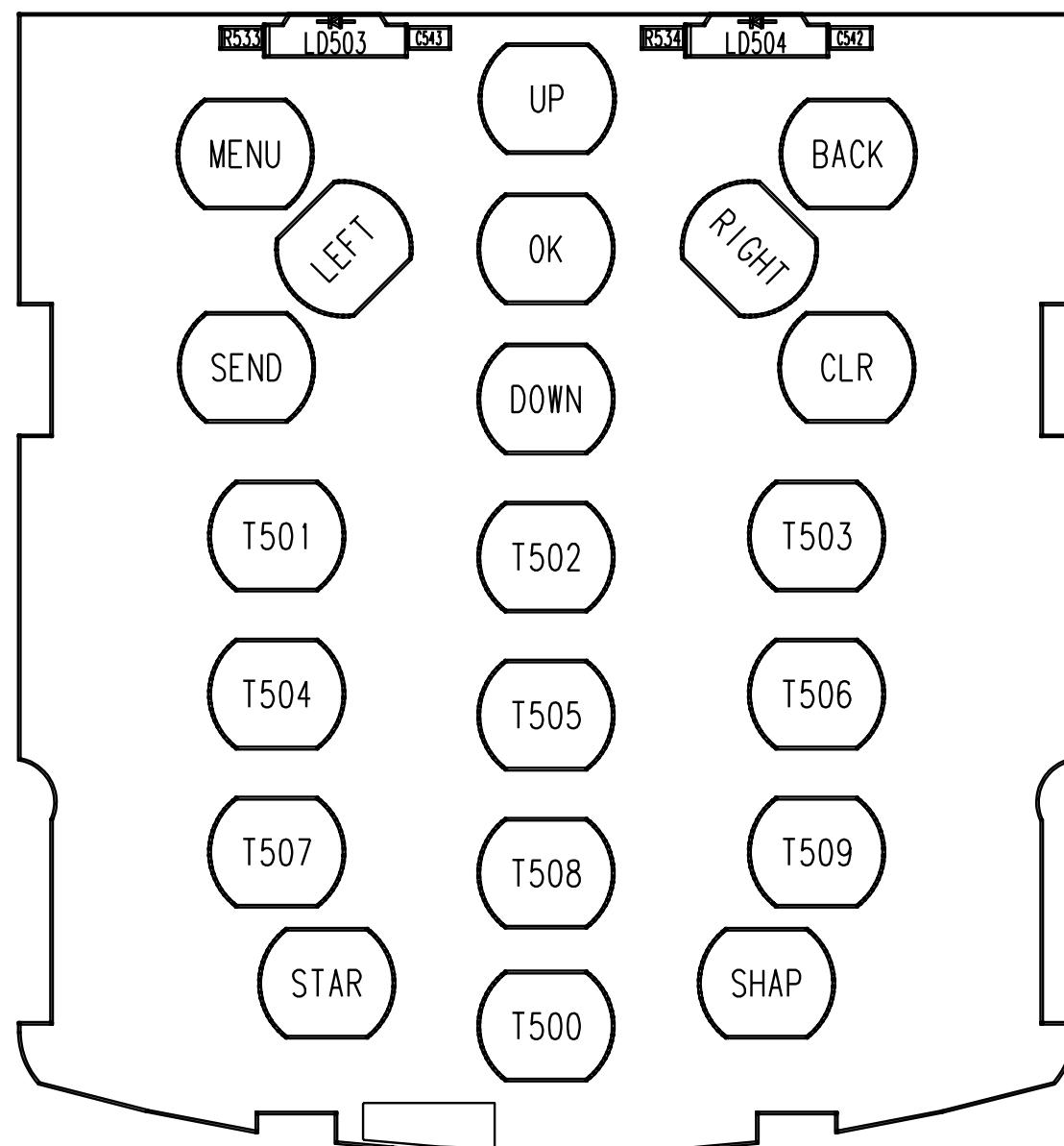
KE770-SPEY0046101-1.1-TOP

8. PCB LAYOUT

KE770-SPEY0046101-1.1-BOT
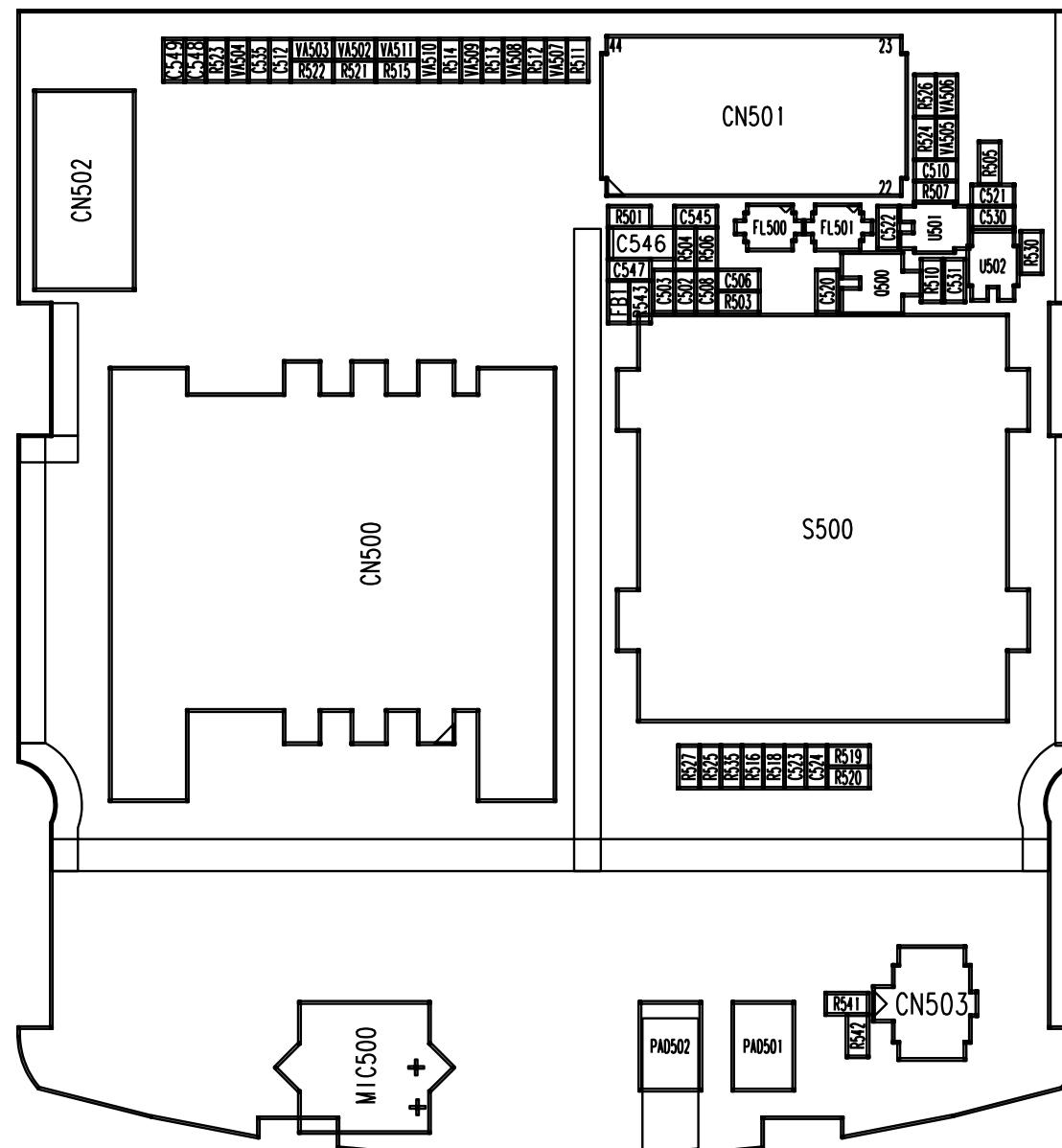
8. PCB LAYOUT

9. RF Calibration

9.1. Test Equipment Setup
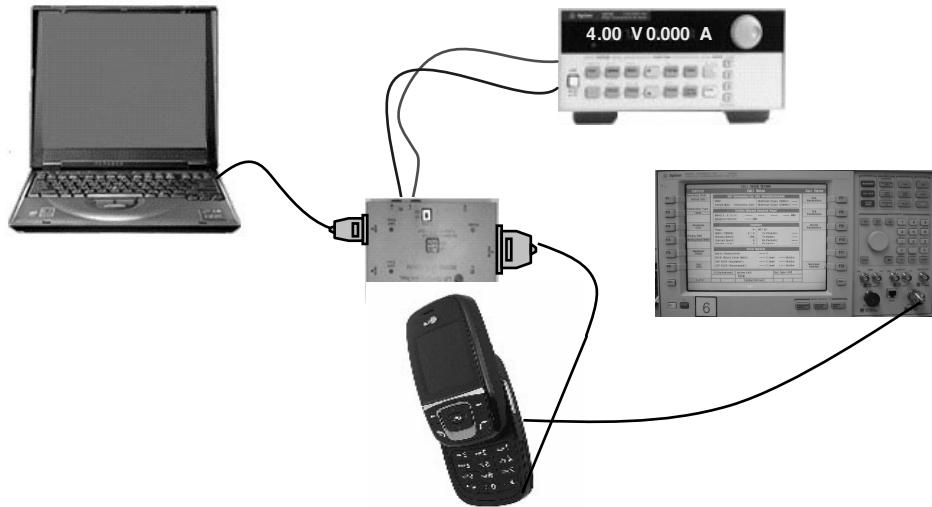
9.2 Calibration Steps

9.2.1. Turn on the Phone.

9.2.2. Execute "HK_24.exe"
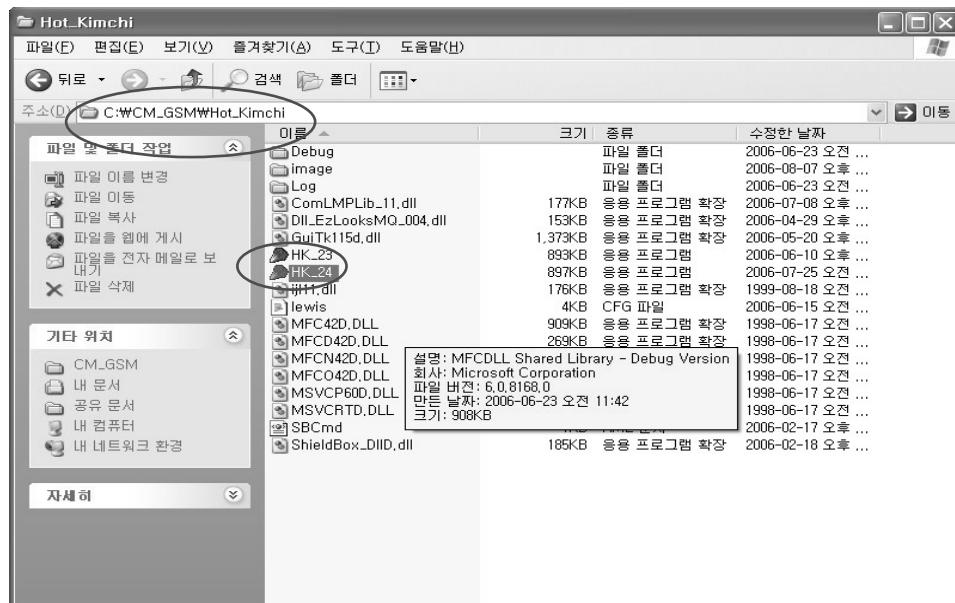
9. RF Calibration

9.2.3. Click "SETTING" Menu
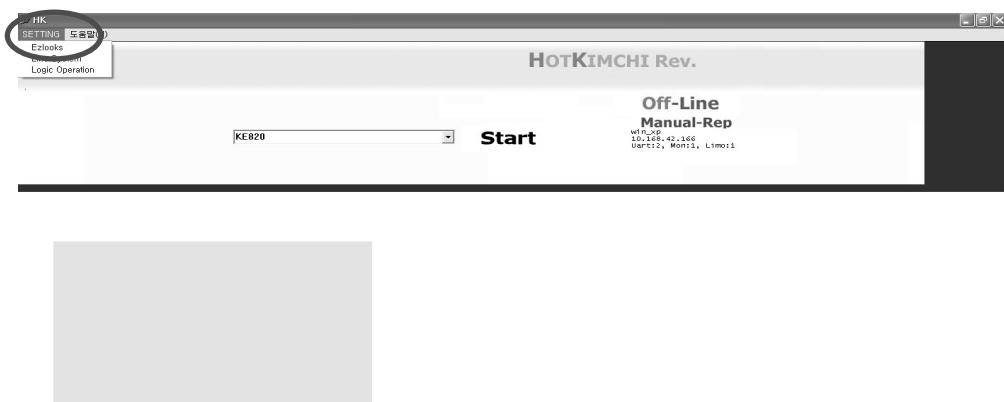
9.2.4. Setup "Ezlooks" menu such as the following figure
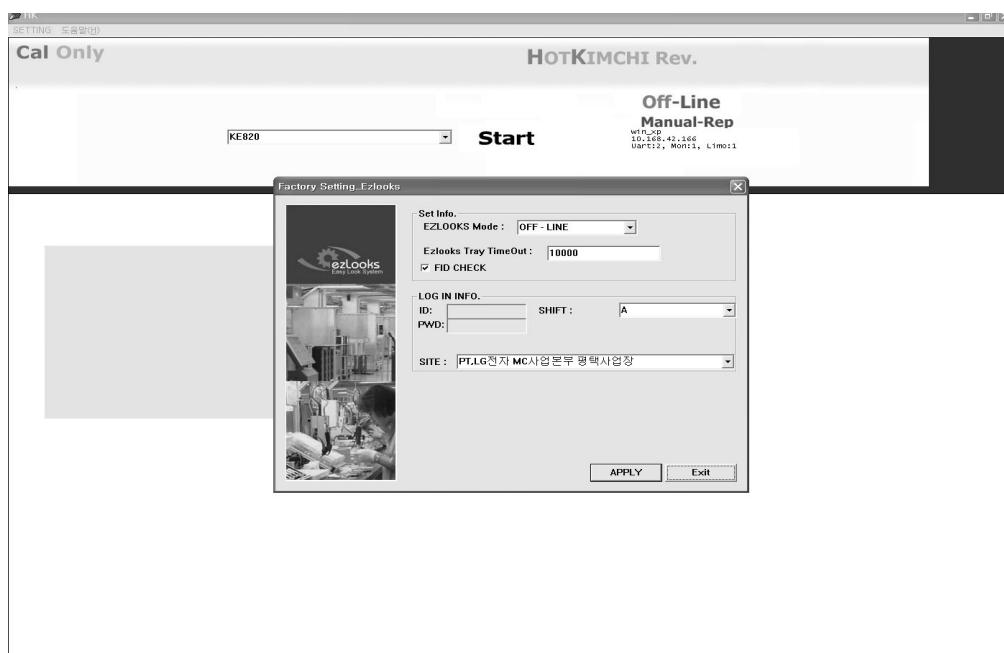
9.2.5. Setup "Line System" menu such as the following figure
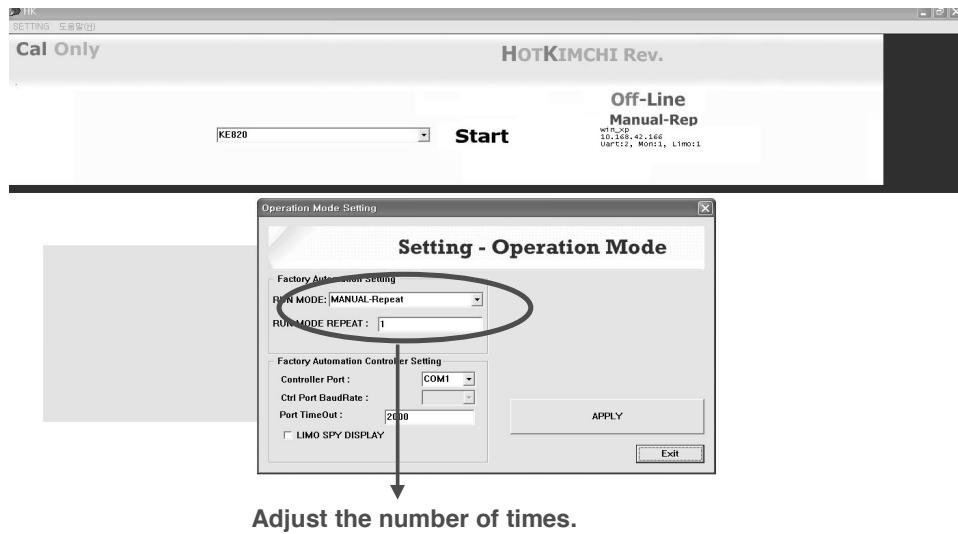
Adjust the number of times.

9.2.6.Setup Logic operation such as the following figure.

Operation Mode
1. By-Pass: not control by GPIB
2. Normal : control by GPIB

Setup UART Port
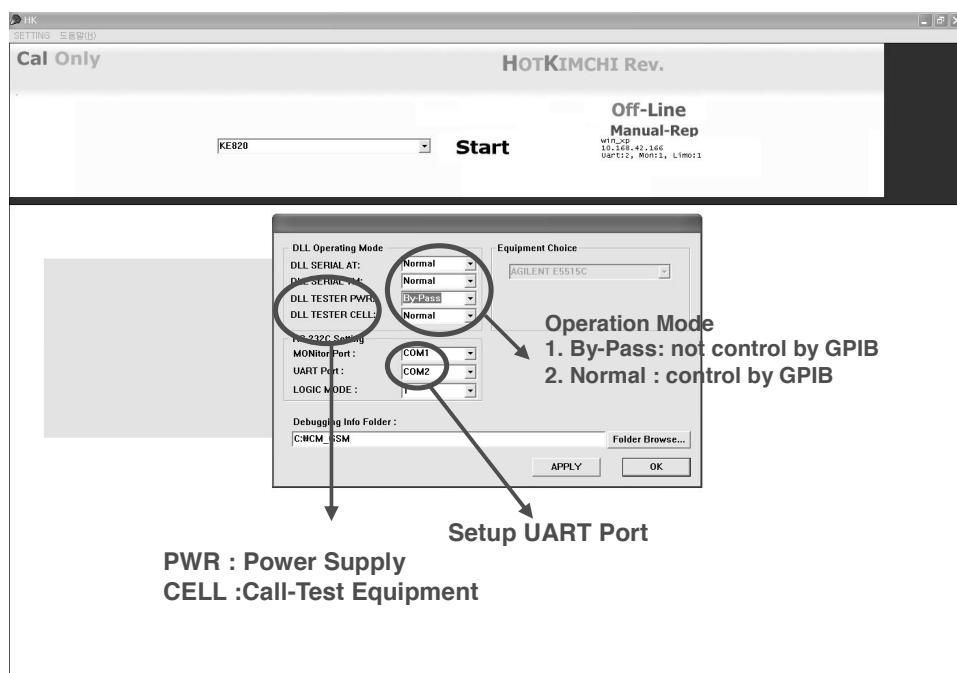
PWR : Power Supply
CELL :Call-Test Equipment

9. RF Calibration

9.2.7. Select "MODEL".

9.2.8. Click "START" for RF calibration

9.2.9. RF Calibration finishes.

10. Stand-alone Test

10.1 Test Program Setting

① Set COM Port.

② Check PC Baud rate.

③ Confirm EEPROM & Delta file prefix name.
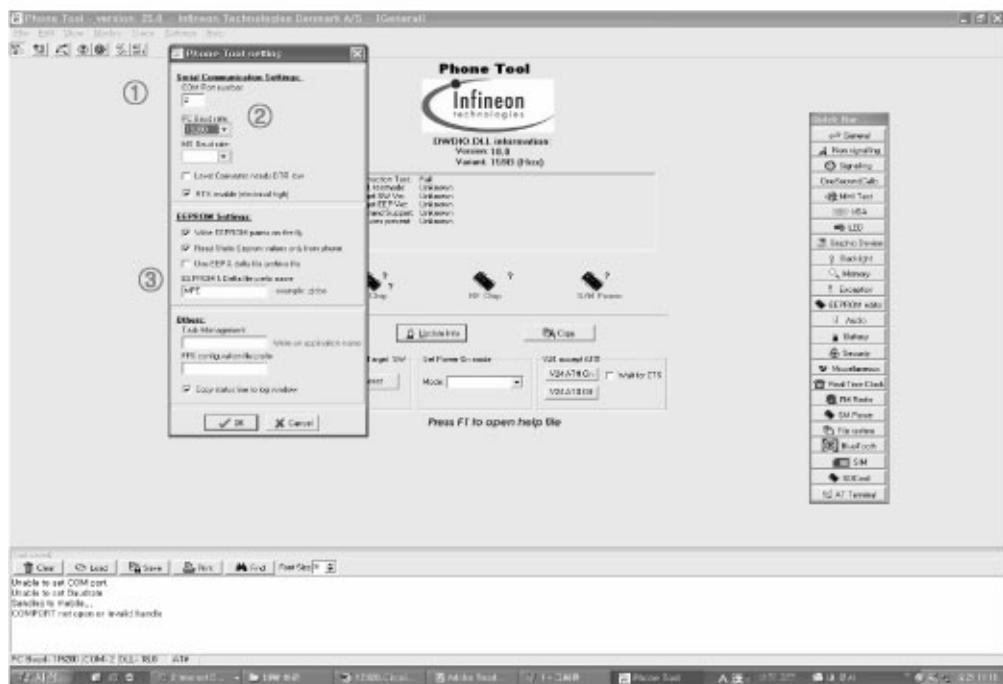
④ Click "Update Info" for communicating Phone and Test-Program.
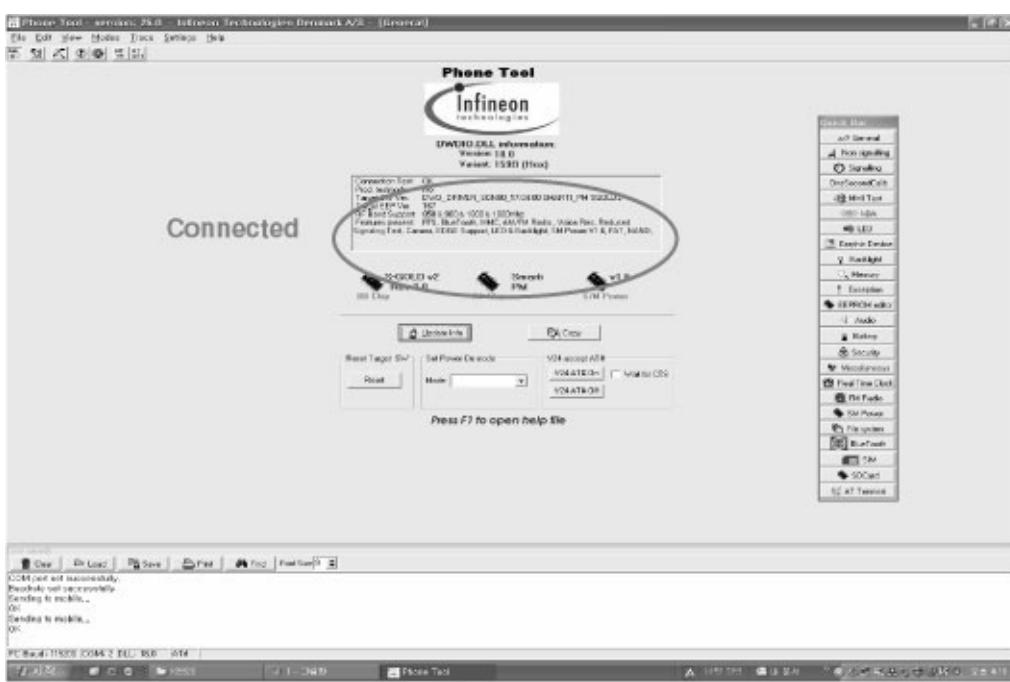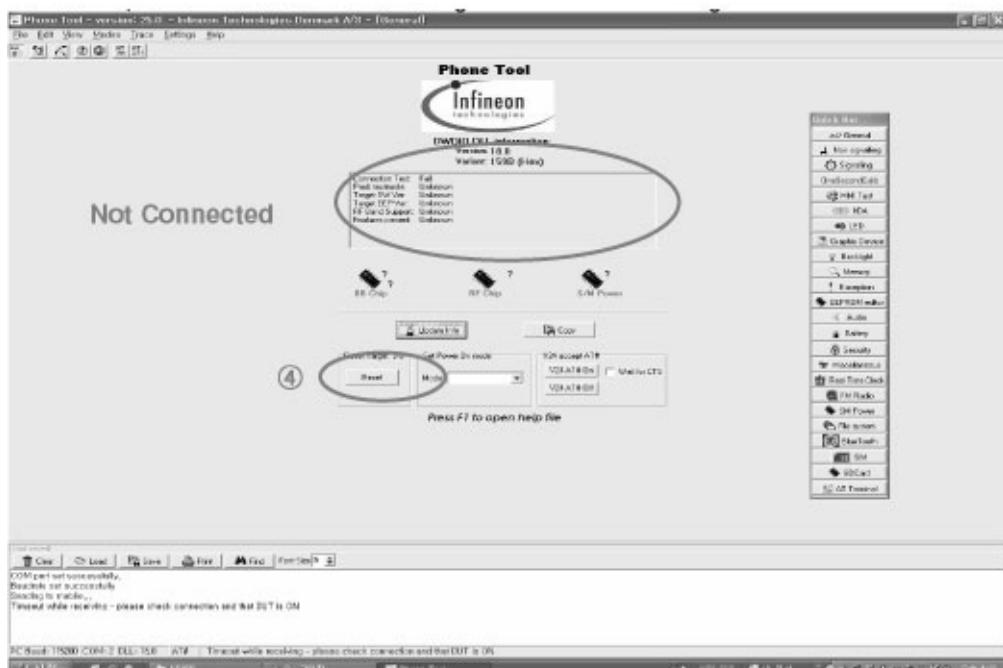
⑤ For the purpose of the Standalone Test, Change the Phone to "ptest m ode" and then Click the "Reset" bar.

⑥ Select "Non signaling" in the Quick Bar menu. Then Standalone Test setup is finished.

Change "ptest mood"
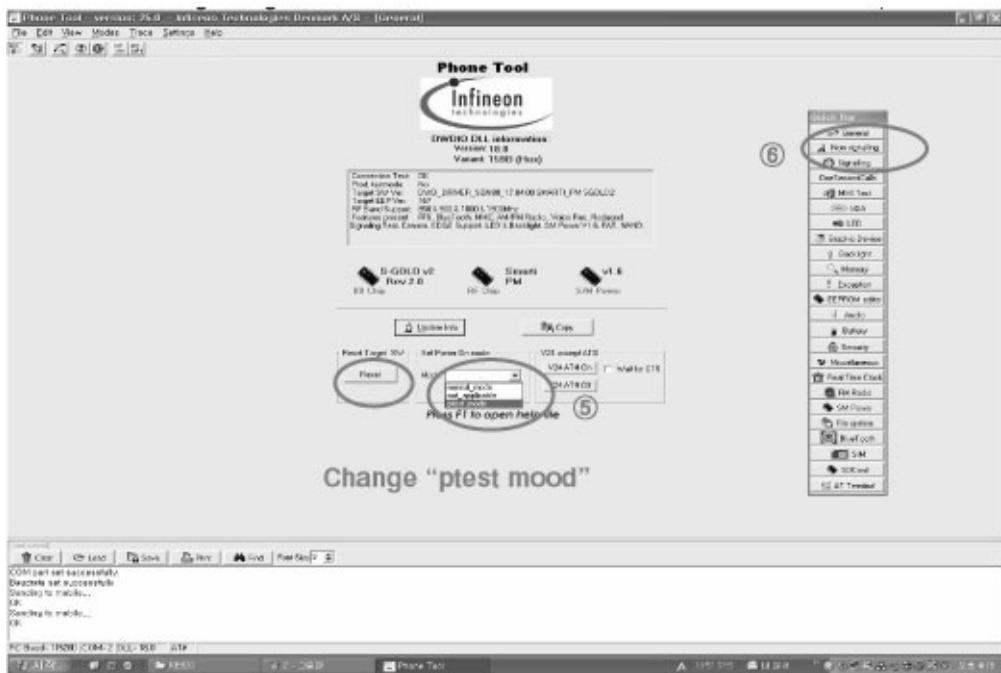
11. ENGINEERING MODE

Engineering mode is designed to allow a service man/engineer to view and test the basic functions provided by a handset. The key sequence for switching the engineering mode on is "2945#*#" Select. Pressing END will switch back to non-engineering mode operation. Use Up and Down key to select a menu and press 'select' key to progress the test. Pressing 'back key will switch back to the original test menu.

[1] All auto test

[2] Baseband test

 [2-1] LED

  [2-1-1] BACKLIGHT

  [2-1-1-1] MAIN LCD ON/OFF

  [2-1-1-2] KEYPAD ON/OFF

 [2-2] LCD

  [2-2-1] LCD AUTO

  [2-2-2] LCD COLOR

  [2-2-3] LCD QUALITY

 [2-3] CAMERA

  [2-3-1] PREVIEW

  [2-3-2] VIDEO

  [2-3-3] SETTING

 [2-4] FONT

 [2-5] ALERT

  [2-5-1] VIBRATOR

  [2-5-2] RING

  [2-5-3] EFFECT SOUND

  [2-5-4] IMELODY SOUND

  [2-5-5] EMS SOUND

 [2-6] SERIAL PORT

  [2-6-1] MODEM

  [2-6-2] IrDA

 [2-7] BATTERY INFO1

 [2-8] AUDIO GAIN

  [2-6-1] RECEIVER

  [2-6-2] EAR MIC

  [2-6-3] LOUD SPEAKER

  [2-6-4] HANDSFREE

  [2-6-5] DEFAULT VALUE

  [2-6-6] DAI TEST

  [2-6-6] LOOPBACK TEST

 [2-9] FM RADIO TEST

  [2-9-1] ON OFF TEST

  [2-9-2] TUNE TEST

  [2-9-3] SEEK TEST

 [2-0] BT TEST MODE

 [2-*] TOUCH[PSOC]

  [2-*-1] TOUCH KEY PROGRAM

  [2-*-2] TOUCH LED

[3] MG810c VERS

[4] ENG MODE

 [4-1] CELL ENVIRON

 [4-2] LOCATION INFO

 [4-3] LAYER1 INFO

 [4-4] BAND SELECTION

[5] CALL TIMER

[6] FACTORY DEFAULT

[7] FACTORY RESULT

12. EXPLODED VIEW & REPLACEMENT PART LIST

12.1 EXPLODED VIEW

REAR ASSY [ACGM0082802]

FRONT ASSY [ACGK0081602]

CAMERA COVER ASSY [ACGN0006302]

NO.	DESCRIPTION	Q'TY	DRAWING NO.	REMARK
42	PAD,CAMERA	1	MPBT003500I	
41	TAPE, MOTOR	1	MTAF001000I	
40	TAPE, SHIELD	1	MTAC004490I	
39	PAD, INTENNA	1	MPBZ018330I	
38	PAD,PCB MAIN	1	MPBZ015770I	
37	TAPE,PROTECTION COVER CAMERA	1	MEAB014150I	
36	PCB ASSY,MAIN INSERT	1		
35	FRAME,SHIELD	1	MFEA001280I	
34	CAN,SHIELD	1	MCBA001310I	
33	INSERT	2	MICZ002940I	
32	PAD, LCD CON	2	MPBZ015760I	
31	TAPE, CAMERA	2	MTAZ016430I	
30	BT	1		
29	TAPE,BT	1	MTAZ016440I	
28	CAP,EARPHONE JACK	1	MCCC004100I	
27	TAPE,PROTECTION END	1	MTAB014130I	
26	TAPE,PROTECTION VOL	1	MTAB014140I	
25	BUTTON,VOLUME	1	MBJN001080I	
24	BUTTON,END	1	MBJN000970I	
23	COVER,REAR	1	MCJN006080I	
22	FILTER,MIKE	1	MFBD001910I	
21	HOLDER,MIK	1	MHGF000430I	
20	TAPE,SPEAKER	1	MTAZ016420I	
19	PAD,KEY PCB	1	MPBZ015750I	
18	TAPE,LCD	2	MTAZ016460I	
17	INTENNA	1		
16	PCB ASSY,SUB INSERT	1		
15	PAD,MOTOR	1	MPBJ003790I	
14	SPEAKER	1		
13	CAMERA	1		
12	MOTOR	1		
11	DOME ASSY,METAL	1	ADCA005960I	
10	LCD	1		
9	TAPE,SHIELD_KEYPCB	1	MTAC004910I	
8	BUTTON.DIAL	1	MBJA002270Z	
7	PAD,LCD	1	MPBG005340I	
6	FILTER,RECEIVER	1	MFBB001910I	
5	INSULATOR	2	MIDZ012140I	
4	COVER,FRONT	1	MCJK006570I	
3	TAPE,WINDOW	1	MTAD006040I	
2	TAPE,PROTECTION KEYPAD	1		
1	WINDOW,LCD	1	MWAC007370I	
NO.	DESCRIPTION	Q'TY	DRAWING NO.	REMARK

NO.	DESCRIPTION	Q'TY	DRAWING NO.	REMARK
57	GASKET, REAR	1	MGAZ005420I	
56	PAD, FRONT	1	MPBZ017450I	
55	COVER,BATTRY	1	MCJA003760I	
54	BATTERY	1		
53	TAPE,PROTECTION DECO CAMERA	1	MTAB014160I	
52	DECO,CAMERA	1	MDAD002710I	
51	TAPE,DECO CAMERA	1	MTAZ016490I	
50	PAD, LED	1	MPBZ017440I	
49	WINDOW,CAMERA	1	MWAE002200I	
48	FINGER GROUND	1	MFCA000720I	
47	TAPE,CAMERA WINDOW	1	MTAZ016470I	
46	CAP,MOBILE SWITCH	1	MCCF004060I	
45	SPRING,LOCKER	1	MSDC001490I	
44	LOCKER,BATTRY	1	MLEA003600I	
43	COVER,CAMERA REAR	1	MCJQ000240I	

12.2 Replacement Parts
<Mechanic component>

Note: This Chapter is used for reference, Part order is ordered by SBOM standard on GCSC

Level	Location No	Description	Part Number	Spec	Color	Remark
1		GSM,BAR/FILP	TGSM0048705		Silver	
2	AAAY00	ADDITION	AAAY0140120		Shining Silver	
3	MCCZ00	CAP	MCCZ0021602	BOX, TW, , , , ,	Without Color	
3	MCJZ00	COVER	MCJZ0044201	BOX, TW, , , , ,	Without Color	
3	MLAC00	LABEL,BARCODE	MLAC0003005	PRINTING, (empty), , 105, 40, ,	Blue	
3	MLAJ00	LABEL,MASTER BOX	MLAJ0004401	LABEL,MASTER BOX(for C1300i NEW_CGR)	Without Color	
3	MPBZ00	PAD	MPBZ0155625	BOX, TW, , , , ,	Without Color	
3	MPCY00	PALLET	MPCY0012403	COMPLEX, (empty), , , , ,	DARK BLUE	
2	APEY00	PHONE	APEY0363102		Shining Silver	
3	ACGG00	COVER ASSY,FOLDER	ACGG0081502		Silver	
4	ACGK00	COVER ASSY,FRONT	ACGK0081602		Silver	
5	MCJK00	COVER,FRONT	MCJK0065701	PRESS, STS, 0.5, , , ,	TITANIUM	4
5	MFBB00	FILTER,RECEIVER	MFBB0019101	COMPLEX, (empty), , , , ,	Without Color	6
5	MIDZ00	INSULATOR	MIDZ0121401	COMPLEX, (empty), , , , ,	Without Color	5
5	MPBG00	PAD,LCD	MPBG0053401	COMPLEX, (empty), , , , ,	Without Color	7
5	MPBZ00	PAD	MPBZ0174501	COMPLEX, (empty), , , , ,	Without Color	56
5	MTAD00	TAPE,WINDOW	MTAD0060401	COMPLEX, (empty), , , , ,	Without Color	3
4	ACGM00	COVER ASSY,REAR	ACGM0082802		Silver	
5	MBJN00	BUTTON,VOLUME	MBJN0012501	COMPLEX, (empty), , , , ,	Black	25
5	MBJZ00	BUTTON	MBJZ0009702	COMPLEX, (empty), , , , ,	Silver	24
5	MCCC00	CAP,EARPHONE JACK	MCCC0041002	COMPLEX, (empty), , , , ,	Silver	28
5	MCJN00	COVER,REAR	MCJN0060802	MOLD, PC LEXAN EXL4419, , , , ,	Silver	23
5	MFBD00	FILTER,MIKE	MFBD0019101	COMPLEX, (empty), , , , ,	Without Color	22
5	MGAZ00	GASKET	MGAZ0054201	COMPLEX, (empty), , , , ,	Without Color	57
5	MHGF00	HOLDER,MIKE	MHGF0004301	COMPLEX, (empty), , , , ,	Without Color	21
5	MICZ00	INSERT	MICZ0029401	CUTTING, STS, , , , ,	Without Color	33
5	MLAB00	LABEL,A/S	MLAB0000601	HUMIDITY STICKER	Without Color	
5	MPBZ00	PAD	MPBZ0157501	COMPLEX, (empty), , , , ,	Without Color	19
5	MPBZ01	PAD	MPBZ0157601	COMPLEX, (empty), , , , ,	Without Color	32
5	MPBZ03	PAD	MPBZ0183301	COMPLEX, (empty), , , , ,	Without Color	39
5	MTAB00	TAPE,PROTECTION	MTAB0141301	COMPLEX, (empty), , , , ,	Without Color	27
5	MTAB01	TAPE,PROTECTION	MTAB0141401	COMPLEX, (empty), , , , ,	Without Color	26
5	MTAC00	TAPE,SHIELD	MTAC0044901	COMPLEX, (empty), , , , ,	Without Color	40

12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No	Description	Part Number	Spec	Color	Remark
5	MTAF00	TAPE,MOTOR	MTAF0010001	COMPLEX, (empty), , , , ,	Without Color	41
5	MTAZ00	TAPE	MTAZ0164201	COMPLEX, (empty), , , , ,	Without Color	20
5	MTAZ01	TAPE	MTAZ0164301	COMPLEX, (empty), , , , ,	Without Color	31
5	MTAZ02	TAPE	MTAZ0164401	COMPLEX, (empty), , , , ,	Without Color	29
5	MTAZ04	TAPE	MTAZ0164601	COMPLEX, (empty), , , , ,	Without Color	18
4	GMEY00	SCREW MACHINE,BIND	GMEY0011201	1.4 mm,3 mm,MSWR3(BK) ,N ,+ ,NYLOK	Without Color	
4	MBJA00	BUTTON,DIAL	MBJA0022702	COMPLEX, (empty), 0.12, , , ,	Shining Silver	8
4	MIDZ00	INSULATOR	MIDZ0128001	COMPLEX, (empty), , , , ,	Without Color	
4	MPBJ00	PAD,MOTOR	MPBJ0037901	COMPLEX, (empty), , , , ,	Without Color	15
4	MTAB00	TAPE,PROTECTION	MTAB0146601	COMPLEX, (empty), , , , ,	Without Color	
4	MTAC00	TAPE,SHIELD	MTAC0045001	COMPLEX, (empty), , , , ,	Without Color	
4	MTAC01	TAPE,SHIELD	MTAC0049101	COMPLEX, (empty), , , , ,	Without Color	9
4	MWAC00	WINDOW,LCD	MWAC0078801	COMPLEX, (empty), , , , ,	Silver	1
5	MCBA00	CAN,SHIELD	MCBA0013101	PRESS, STS, 0.1, , , ,	Without Color	34
5	MIDZ00	INSULATOR	MIDZ0128001	COMPLEX, (empty), , , , ,	Without Color	
5	MPBZ00	PAD	MPBZ0183501	COMPLEX, (empty), , , , ,	Without Color	

<Main component>

Note: This Chapter is used for reference, Part order is ordered by SBOM standard on GCSC

Level	Location No	Description	Part Number	Spec	Color	Remark
5	SNGF00	ANTENNA,GSM,FIXED	SNGF0024101	3.0 ,-2.0 dBd,, ,bluetooth, internal ,; ,SINGLE ,-2.0 ,50 ,3.0		
5	SNGF01	ANTENNA,GSM,FIXED	SNGF0024501	3.0 ,-2.0 dBd,, ,internal, GSM900/1800/1900 ,; ,TRIPLE ,-2.0 ,50 ,3.0		
4	SACY00	PCB ASSY,FLEXIBLE	SACY0043603		Silver	
5	SACE00	PCB ASSY,FLEXIBLE,SMT	SACE0038304		Silver	
6	SACC00	PCB ASSY,FLEXIBLE,SMT BOTTOM	SACC0021702		Silver	
7	ENBY00	CONNECTOR,BOARD TO BOARD	ENBY0023201	44 PIN,0.4 mm,ETC , ,H=0.9, Header		
6	SPCY00	PCB,FLEXIBLE	SPCY0091601	POLYI ,0.2 mm,DOUBLE ,KE770 B TO B FPCB ,; , , , , , , , , ,		
4	SAEY00	PCB ASSY,KEYPAD	SAEY0056701			
5	SAEB00	PCB ASSY,KEYPAD,INSERT	SAEB0020901			
6	ADCA00	DOME ASSY,METAL	ADCA0059601		Without Color	11
5	SAEE00	PCB ASSY,KEYPAD,SMT	SAEE0024201			
6	SAEC00	PCB ASSY,KEYPAD,SMT BOTTOM	SAEC0022401			
7	C503	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
7	C506	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
7	C512	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
7	C520	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C521	CAP,CHIP,MAKER	ECZH0003202	1 uF,6.3V ,Z ,Y5V ,HD ,1005 ,R/TP		
7	C522	CAP,CHIP,MAKER	ECZH0003202	1 uF,6.3V ,Z ,Y5V ,HD ,1005 ,R/TP		
7	C523	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C524	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
7	C530	CAP,CHIP,MAKER	ECZH0003202	1 uF,6.3V ,Z ,Y5V ,HD ,1005 ,R/TP		
7	C531	CAP,CHIP,MAKER	ECZH0003202	1 uF,6.3V ,Z ,Y5V ,HD ,1005 ,R/TP		
7	C545	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
7	C546	CAP,TANTAL,CHIP	ECTH0004807	10 uF,10V ,M ,STD ,1608 ,R/TP ,; , ,[empty] ,[empty] , ,-55TO+125C , ,[empty] ,[empty] ,[empty] ,[empty]		
7	C547	CAP,CERAMIC,CHIP	ECCH0000108	7 pF,50V,D,NP0,TC,1005,R/TP		
7	C548	DIODE,TVS	EDTY0008501	TFSC ,5 V,50 W,R/TP ,small size		
7	C549	DIODE,TVS	EDTY0008501	TFSC ,5 V,50 W,R/TP ,small size		
7	CN500	CONN,SOCKET	ENSY0018701	6 PIN,ETC , ,2.54 mm,H=1.8		
7	CN501	CONNECTOR,BOARD TO BOARD	ENBY0023301	44 PIN,0.4 mm,ETC , ,H=0.9, Socket		

Level	Location No	Description	Part Number	Spec	Color	Remark
7	CN503	CONN,RF SWITCH	ENWY0003901	,SMD , dB,		
7	FB1	FILTER,BEAD,CHIP	SFBH0008102	1800 ohm,1005 ,Bead		
7	FL500	FILTER,EMI/POWER	SFEY0010501	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (100Ohm,15pF), Pb-free		
7	FL501	FILTER,EMI/POWER	SFEY0010501	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (100Ohm,15pF), Pb-free		
7	MIC500	MICROPHONE	SUMY0010515	UNIT ,-44 dB,4*1.35 ,JFET 330ohm ,; , , ,OMNI ,1.5TO5.5V , ,SMD		
7	Q500	TR,FET,P-CHANNEL	EQFP0004501	SOT-323 ,.29 W,1.8 V,.86 A,R/TP ,P-Chanel MOSFET, Pb free		
7	R501	RES,CHIP	ERHY0003201	1000 ohm,1/16W ,F ,1005 ,R/TP		
7	R503	RES,CHIP	ERHY0003201	1000 ohm,1/16W ,F ,1005 ,R/TP		
7	R504	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
7	R506	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
7	R507	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
7	R510	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
7	R511	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
7	R512	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
7	R513	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
7	R514	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
7	R515	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
7	R516	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
7	R519	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
7	R520	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
7	R521	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
7	R522	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
7	R523	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
7	R524	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
7	R525	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
7	R526	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
7	R527	RES,CHIP,MAKER	ERHZ0000487	470 Kohm,1/16W ,J ,1005 ,R/TP		
7	R530	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
7	R541	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
7	R543	RES,CHIP	ERHY0003201	1000 ohm,1/16W ,F ,1005 ,R/TP		
7	S500	CONN,SOCKET	ENSY0017701	8 PIN,ETC , , mm,Micro-SD, Hinge type		
7	U501	IC	EUSY0223008	HVSOF5 ,5 PIN,R/TP ,150mA,2.9V,LDO		
7	U502	IC	EUSY0223003	HVSOF5 ,5 PIN,R/TP ,150mA CMOS LDO WITH OUTPUT CONTROL / 3.3V		
7	VA502	VARISTOR	SEVY0001001	14 V, ,SMD ,50pF, 1005		

Level	Location No	Description	Part Number	Spec	Color	Remark
7	VA503	VARISTOR	SEVY0001001	14 V, ,SMD ,50pF, 1005		
7	VA504	VARISTOR	SEVY0001001	14 V, ,SMD ,50pF, 1005		
7	VA505	VARISTOR	SEVY0001001	14 V, ,SMD ,50pF, 1005		
7	VA506	VARISTOR	SEVY0001001	14 V, ,SMD ,50pF, 1005		
7	VA507	VARISTOR	SEVY0001001	14 V, ,SMD ,50pF, 1005		
7	VA508	VARISTOR	SEVY0001001	14 V, ,SMD ,50pF, 1005		
7	VA509	VARISTOR	SEVY0001001	14 V, ,SMD ,50pF, 1005		
7	VA510	VARISTOR	SEVY0001001	14 V, ,SMD ,50pF, 1005		
7	VA511	VARISTOR	SEVY0001001	14 V, ,SMD ,50pF, 1005		
6	SAED00	PCB ASSY,KEYPAD,SMT TOP	SAED0022401			
7	LD503	DIODE,LED,CHIP	EDLH0013401	WHITE ,ETC ,R/TP ,SIDEVIEW LED ,; ,[empty] , , , , , ,[empty] ,[empty] ,2P		
7	LD504	DIODE,LED,CHIP	EDLH0013401	WHITE ,ETC ,R/TP ,SIDEVIEW LED ,; ,[empty] , , , , , ,[empty] ,[empty] ,2P		
7	R533	RES,CHIP,MAKER	ERHZ0000495	56 ohm,1/16W ,J ,1005 ,R/TP		
7	R534	RES,CHIP,MAKER	ERHZ0000495	56 ohm,1/16W ,J ,1005 ,R/TP		
6	SPEY00	PCB,KEYPAD	SPEY0046101	FR-4 ,0.5 mm,BUILD-UP 6 ,KE770 KEY PCB ,; , , , , , , , , ,		
4	SJMY00	VIBRATOR,MOTOR	SJMY0008203	3 V,.1 A,10*2.0T ,12mm		
4	SPKY00	PCB,SIDEKEY	SPKY0041201	POLYI ,0.2 mm,DOUBLE ,KE770 VOLUM_CAMERA SIDEKEY FPCB ,; , , , , , , , , ,		
4	SUSY00	SPEAKER	SUSY0024101	ASSY ,8 ohm,88 dB, mm, ,; , , , , ,750 ,18*10*3T ,WIRE		
4	SVLC00	LCD MODULE	SVLM0022501	MAIN ,176*220 (1.76") ,34*45*1.8 ,262k ,TFT ,TM ,R69410 (Renesas) ,NTSC:60%		
4	SWCC00	CABLE,COAXIAL	SWCC0004001	86 mm,1 LINE, ,; ,[empty] ,[empty] ,[empty] , ,BLACK , ,[empty]		
3	ACGN00	COVER ASSY,CAMERA	ACGN0006302		Silver	
4	AWAZ00	WINDOW ASSY	AWAZ0009701	CAMERA	Without Color	
5	MTAZ00	TAPE	MTAZ0164701	COMPLEX, (empty), , , , ,	Without Color	47
5	MWAE00	WINDOW,CAMERA	MWAE0022001	CUTTING, PMMA MR 200, , , , ,	Without Color	49
4	MCCF00	CAP,MOBILE SWITCH	MCCF0040602	COMPLEX, (empty), , , , ,	Silver	46
4	MCJQ00	COVER,CAMERA(REAR)	MCJQ0002402	MOLD, PA MXD6 RENY NXG5945S, , , , ,	Silver	43
4	MDAD00	DECO,CAMERA	MDAD0027101	ELECTROFORMING, Ni, , , , ,	Silver	52
4	MFCA00	FINGER,GROUND	MFCA0007201	PRESS, STS, 0.2, , , ,	Without Color	48
4	MLEA00	LOCKER,BATTERY	MLEA0036002	MOLD, POM LUCEL FW-700A, , , , ,	Silver	44
4	MPBT00	PAD,CAMERA	MPBT0035001	COMPLEX, (empty), , , , ,	Without Color	42
4	MPBZ00	PAD	MPBZ0157701	COMPLEX, (empty), , , , ,	Without Color	38
4	MPBZ03	PAD	MPBZ0174401	COMPLEX, (empty), , , , ,	Without Color	50
4	MSDC00	SPRING,LOCKER	MSDC0014901	PRESS, STS, , , , ,	Without Color	45

12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No	Description	Part Number	Spec	Color	Remark
4	MTAB00	TAPE,PROTECTION	MTAB0141501	COMPLEX, (empty), , , , ,	Without Color	37
4	MTAB01	TAPE,PROTECTION	MTAB0141601	COMPLEX, (empty), , , , ,	Without Color	53
4	MTAZ01	TAPE	MTAZ0164901	COMPLEX, (empty), , , , ,	Without Color	51
3	GMEY00	SCREW MACHINE,BIND	GMEY0011201	1.4 mm,3 mm,MSWR3(BK) ,N ,+ ,NYLOK	Without Color	
3	MLAZ	LABEL	MLAZ0046601	PRINTING, (empty), , , , ,	Without Color	
3	SAFY00	PCB ASSY,MAIN	SAFY0157563		Silver	
4	SAFB00	PCB ASSY,MAIN,INSERT	SAFB0061604			
5	SPKY00	PCB,SIDEKEY	SPKY0041301	POLYI ,0.2 mm,DOUBLE ,KE770 END SIDEKEY FPCB ,; , , , , , , , , ,		
4	SAFF00	PCB ASSY,MAIN,SMT	SAFF0079561		Black	
5	MLAZ00	LABEL	MLAZ0038301	PID Label 4 Array	Without Color	
5	SAFC00	PCB ASSY,MAIN,SMT BOTTOM	SAFC0069902		Silver	
6	BAT201	BATTERY,CELL,LITHIUM	SBCL0001701	2 V,0.5 mAh,CYLINDER ,Reflow type BB, Max T 1.67, phi 4.8, Pb-Free		
6	C123	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C204	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C205	CAP,TANTAL,CHIP,MAKER	ECTZ0004204	100 uF,6.3V ,M ,STD ,3216 ,R/TP		
6	C206	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C207	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C208	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C209	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C210	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C211	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C212	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C215	CAP,CHIP,MAKER	ECZH0004402	0.1 uF,16V ,Z ,NP0 ,TC ,1005 ,R/TP		
6	C216	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C217	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C223	CAP,CERAMIC,CHIP	ECCH0000393	22 uF,6.3V ,M ,X5R ,HD ,2012 ,R/TP		
6	C224	CAP,CERAMIC,CHIP	ECCH0000393	22 uF,6.3V ,M ,X5R ,HD ,2012 ,R/TP		
6	C225	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C226	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C227	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C228	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C229	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C230	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C231	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C232	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		

Level	Location No	Description	Part Number	Spec	Color	Remark
6	C233	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C234	CAP,CHIP,MAKER	ECZH0004402	0.1 uF,16V ,Z ,NP0 ,TC ,1005 ,R/TP		
6	C242	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C245	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C246	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C250	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C260	CAP,CHIP,MAKER	ECZH0004402	0.1 uF,16V ,Z ,NP0 ,TC ,1005 ,R/TP		
6	C261	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C262	CAP,CERAMIC,CHIP	ECCH0007801	4.7 uF,10V ,Z ,Y5V ,HD ,1608 ,R/TP		
6	C263	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C264	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C265	CAP,CHIP,MAKER	ECZH0003121	68 nF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C266	CAP,CHIP,MAKER	ECZH0001211	220 nF,10V ,Z ,Y5V ,HD ,1005 ,R/TP		
6	C267	CAP,CHIP,MAKER	ECZH0004402	0.1 uF,16V ,Z ,NP0 ,TC ,1005 ,R/TP		
6	C268	CAP,TANTAL,CHIP	ECTH0005301	100 uF,6.3V ,M ,L_ESR ,3216 ,R/TP ,; , ,[empty] ,[empty] , ,[empty] , ,3.2X1.6X1MM ,[empty] ,[empty] ,[empty]		
6	C269	CAP,TANTAL,CHIP	ECTH0005301	100 uF,6.3V ,M ,L_ESR ,3216 ,R/TP ,; , ,[empty] ,[empty] , ,[empty] , ,3.2X1.6X1MM ,[empty] ,[empty] ,[empty]		
6	C270	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C271	CAP,CHIP,MAKER	ECZH0003121	68 nF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C272	CAP,CHIP,MAKER	ECZH0001211	220 nF,10V ,Z ,Y5V ,HD ,1005 ,R/TP		
6	C314	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C315	CAP,CHIP,MAKER	ECZH0004402	0.1 uF,16V ,Z ,NP0 ,TC ,1005 ,R/TP		
6	C316	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C317	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C318	CAP,CHIP,MAKER	ECZH0004402	0.1 uF,16V ,Z ,NP0 ,TC ,1005 ,R/TP		
6	C319	CAP,CHIP,MAKER	ECZH0004402	0.1 uF,16V ,Z ,NP0 ,TC ,1005 ,R/TP		
6	C320	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C321	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C322	CAP,CHIP,MAKER	ECZH0004402	0.1 uF,16V ,Z ,NP0 ,TC ,1005 ,R/TP		
6	C323	CAP,CERAMIC,CHIP	ECCH0007901	10 uF,4V ,M ,X5R ,TC ,1608 ,R/TP		
6	C324	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	C325	CAP,CHIP,MAKER	ECZH0004402	0.1 uF,16V ,Z ,NP0 ,TC ,1005 ,R/TP		
6	C330	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C331	CAP,TANTAL,CHIP,MAKER	ECTZ0000318	33 uF,10V ,M ,STD ,3216 ,R/TP		
6	C332	CAP,CHIP,MAKER	ECZH0004402	0.1 uF,16V ,Z ,NP0 ,TC ,1005 ,R/TP		
6	C333	CAP,CHIP,MAKER	ECZH0004402	0.1 uF,16V ,Z ,NP0 ,TC ,1005 ,R/TP		
6	C334	CAP,CHIP,MAKER	ECZH0004402	0.1 uF,16V ,Z ,NP0 ,TC ,1005 ,R/TP		

12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No	Description	Part Number	Spec	Color	Remark
6	C335	CAP,CHIP,MAKER	ECZH0004402	0.1 uF,16V ,Z ,NP0 ,TC ,1005 ,R/TP		
6	C336	CAP,CHIP,MAKER	ECZH0000822	1.5 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C337	CAP,CHIP,MAKER	ECZH0004402	0.1 uF,16V ,Z ,NP0 ,TC ,1005 ,R/TP		
6	C338	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C339	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C340	CAP,CERAMIC,CHIP	ECCH0007801	4.7 uF,10V ,Z ,Y5V ,HD ,1608 ,R/TP		
6	C345	CAP,CERAMIC,CHIP	ECCH0000184	2.7 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C347	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C350	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C406	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C407	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C408	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C409	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C411	CAP,CHIP,MAKER	ECZH0004402	0.1 uF,16V ,Z ,NP0 ,TC ,1005 ,R/TP		
6	C412	CAP,CHIP,MAKER	ECZH0004402	0.1 uF,16V ,Z ,NP0 ,TC ,1005 ,R/TP		
6	C417	CAP,CERAMIC,CHIP	ECCH0000184	2.7 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C418	CAP,CERAMIC,CHIP	ECCH0000184	2.7 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C422	CAP,CERAMIC,CHIP	ECCH0000184	2.7 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C423	CAP,CERAMIC,CHIP	ECCH0000184	2.7 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C424	CAP,CERAMIC,CHIP	ECCH0000184	2.7 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C425	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C426	CAP,CERAMIC,CHIP	ECCH0000184	2.7 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C427	CAP,CHIP,MAKER	ECZH0004402	0.1 uF,16V ,Z ,NP0 ,TC ,1005 ,R/TP		
6	C428	CAP,CERAMIC,CHIP	ECCH0002002	47000 pF,10V ,K ,B ,HD ,1005 ,R/TP		
6	C429	CAP,CHIP,MAKER	ECZH0004402	0.1 uF,16V ,Z ,NP0 ,TC ,1005 ,R/TP		
6	C430	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C431	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C433	CAP,CHIP,MAKER	ECZH0004402	0.1 uF,16V ,Z ,NP0 ,TC ,1005 ,R/TP		
6	C434	CAP,CHIP,MAKER	ECZH0004402	0.1 uF,16V ,Z ,NP0 ,TC ,1005 ,R/TP		
6	C435	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C440	CAP,TANTAL,CHIP,MAKER	ECTZ0004203	68 uF,6.3V ,M ,STD ,3216 ,R/TP		
6	C441	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C442	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C443	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C444	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C445	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C446	CAP,CHIP,MAKER	ECZH0000822	1.5 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		

Level	Location No	Description	Part Number	Spec	Color	Remark
6	C496	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C497	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	C498	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C499	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C500	CAP,CHIP,MAKER	ECZH0000841	56 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C501	DIODE,TVS	EDTY0008501	TFSC ,5 V,50 W,R/TP ,small size		
6	C502	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C503	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C505	CAP,CERAMIC,CHIP	ECCH0000104	3 pF,50V,C,NP0,TC,1005,R/TP		
6	C507	CAP,CERAMIC,CHIP	ECCH0000113	18 pF,50V,J,NP0,TC,1005,R/TP		
6	C509	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	CN201	CONNECTOR,ETC	ENZY0016301	3 PIN,3.0 mm,ETC , ,H-2.0		
6	CN304	CONNECTOR,BOARD TO BOARD	ENBY0025701	34 PIN,0.4 mm,ETC , ,H=1.5, Socket		
6	CN305	CONNECTOR,I/O	ENRY0006001	18 PIN,0.4 mm,ETC , ,H=2.5		
6	D201	DIODE,SWITCHING	EDSY0017301	VSM ,15 V,100 mA,R/TP ,PB-FREE		
6	FB203	FILTER,BEAD,CHIP	SFBH0001003	220 ohm,2012 ,		
6	FB302	FILTER,BEAD,CHIP	SFBH0007102	10 ohm,1005 ,Ferrite Bead		
6	FB303	FILTER,BEAD,CHIP	SFBH0007102	10 ohm,1005 ,Ferrite Bead		
6	FB304	FILTER,BEAD,CHIP	SFBH0007102	10 ohm,1005 ,Ferrite Bead		
6	FL305	FILTER,EMI/POWER	SFEY0010501	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (100Ohm,15pF), Pb-free		
6	FL306	FILTER,EMI/POWER	SFEY0010501	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (100Ohm,15pF), Pb-free		
6	FL307	FILTER,EMI/POWER	SFEY0010501	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (100Ohm,15pF), Pb-free		
6	FL308	FILTER,DIELECTRIC	SFDY0001601	2450 MHz,2.0*1.25 ,SMD ,Pb-free_Bluetooth_Dielectric		
6	FL401	FILTER,SEPERATOR	SFAY0009001	850.900 ,1800.1900 ,3.5 dB,3.5 dB, dB, dB,ETC ,5.4X3.2X1.2 Size, Quad FEM		
6	L201	INDUCTOR,SMD,POWER	ELCP0005104	10 uH,M ,3.8*3.8*1.8 ,R/TP ,power inductor/ 850mA		
6	L202	INDUCTOR,CHIP	ELCH0004715	27 nH,J ,1005 ,R/TP ,		
6	L203	INDUCTOR,CHIP	ELCH0004715	27 nH,J ,1005 ,R/TP ,		
6	L303	INDUCTOR,CHIP	ELCH0012508	2 nH,S ,1005 ,R/TP ,Film chip, tolerance0.1nH		
6	L304	INDUCTOR,CHIP	ELCH0012508	2 nH,S ,1005 ,R/TP ,Film chip, tolerance0.1nH		
6	L404	INDUCTOR,CHIP	ELCH0004704	4.7 nH,S ,1005 ,R/TP ,		
6	L405	INDUCTOR,CHIP	ELCH0004703	1 nH,S ,1005 ,R/TP ,		
6	L406	INDUCTOR,CHIP	ELCH0004733	4.3 nH,S ,1005 ,R/TP ,Coil		
6	L409	INDUCTOR,CHIP	ELCH0005009	100 nH,J ,1005 ,R/TP ,		

12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No	Description	Part Number	Spec	Color	Remark
6	PT101	THERMISTOR	SETY0006301	NTC ,10000 ohm,SMD ,1005, 3350~3399k, J, R/T, PBFREE		
6	R102	RES,CHIP,MAKER	ERHZ0000237	20 Kohm,1/16W ,F ,1005 ,R/TP		
6	R128	RES,CHIP,MAKER	ERHZ0000244	22 Kohm,1/16W ,F ,1005 ,R/TP		
6	R201	RES,CHIP,MAKER	ERHZ0000445	220 Kohm,1/16W ,J ,1005 ,R/TP		
6	R202	RES,CHIP,MAKER	ERHZ0000485	4700 ohm,1/16W ,J ,1005 ,R/TP		
6	R204	RES,CHIP	ERHY0011901	47 mohm,1/4W ,F ,2012 ,R/TP		
6	R205	RES,CHIP,MAKER	ERHZ0000487	470 Kohm,1/16W ,J ,1005 ,R/TP		
6	R209	RES,CHIP	ERHY0000186	2.2 Kohm,1/16W ,F ,1005 ,R/TP		
6	R211	RES,CHIP	ERHY0000278	82K ohm,1/16W,J,1005,R/TP		
6	R218	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	R219	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	R220	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	R222	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R260	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R261	RES,CHIP,MAKER	ERHZ0000485	4700 ohm,1/16W ,J ,1005 ,R/TP		
6	R262	RES,CHIP,MAKER	ERHZ0000485	4700 ohm,1/16W ,J ,1005 ,R/TP		
6	R308	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R309	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R310	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R313	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R316	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R317	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R321	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	R322	RES,CHIP,MAKER	ERHZ0000407	1000 Kohm,1/16W ,J ,1005 ,R/TP		
6	R323	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R324	RES,CHIP,MAKER	ERHZ0000529	1.5 Kohm,1/16W ,J ,1005 ,R/TP		
6	R325	RES,CHIP,MAKER	ERHZ0000443	2200 ohm,1/16W ,J ,1005 ,R/TP		
6	R326	RES,CHIP,MAKER	ERHZ0000445	220 Kohm,1/16W ,J ,1005 ,R/TP		
6	R327	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R328	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R329	RES,CHIP,MAKER	ERHZ0000486	47 Kohm,1/16W ,J ,1005 ,R/TP		
6	R330	RES,CHIP,MAKER	ERHZ0000444	22 Kohm,1/16W ,J ,1005 ,R/TP		
6	R332	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R333	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R334	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
6	R336	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		

Level	Location No	Description	Part Number	Spec	Color	Remark
6	R338	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R339	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	R340	RES,CHIP,MAKER	ERHZ0000522	24 ohm,1/16W ,J ,1005 ,R/TP		
6	R341	RES,CHIP,MAKER	ERHZ0000522	24 ohm,1/16W ,J ,1005 ,R/TP		
6	R342	RES,CHIP,MAKER	ERHZ0000522	24 ohm,1/16W ,J ,1005 ,R/TP		
6	R343	RES,CHIP,MAKER	ERHZ0000522	24 ohm,1/16W ,J ,1005 ,R/TP		
6	R344	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	R403	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		
6	R404	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		
6	R410	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	R411	RES,CHIP,MAKER	ERHZ0000513	820 ohm,1/16W ,J ,1005 ,R/TP		
6	R413	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	R414	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	R417	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
6	R418	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	SC1	FRAME,SHIELD	MFEA0012801	PRESS, STS, 0.2, , , ,	Without Color	35
6	U201	IC	EUSY0286901	SOT23-5 ,5 PIN,R/TP ,2.5V Sense voltage(max), current monitor		
6	U203	IC	EUSY0269101	PG-VQFN-48 ,48 PIN,R/TP ,PMIC, Pb Free		
6	U206	IC	EUSY0309801	Output capless audio subsystem with 3D ,24 PIN,R/TP ,NS subsystem audio amp		
6	U208	IC	EUSY0300101	WQFN ,10 PIN,R/TP ,Small package Dual SPDT analog Switch, PB-Free		
6	U302	IC	EUSY0300101	WQFN ,10 PIN,R/TP ,Small package Dual SPDT analog Switch, PB-Free		
6	U303	IC	EUSY0156301	SC70 ,5 PIN,R/TP ,Single Supply Comparator, Pb Free		
6	U305	IC	EUSY0274901	P-WFSGA-65(5*5*0.8) ,65 PIN,R/TP ,True Single Chip Bluetooth2.0+EDR solution		
6	U401	IC	EUSY0274801	VQFN ,40 PIN,R/TP ,GPRS, EDGE TRANSCEIVER		
6	U402	PAM	SMPY0010501	35 dBm,47 %, A, dBc, dB,6X6 ,SMD ,QFN ,23 PIN,R/TP ,QBAND GSM/EDGE PAM 6X6		
6	VA201	VARISTOR	SEVY0003901	5.5 V, ,SMD ,480pF, 1005		
6	VA202	VARISTOR	SEVY0003901	5.5 V, ,SMD ,480pF, 1005		
6	VA301	VARISTOR	SEVY0004001	18 V, ,SMD ,3pF, 1005		
6	VA302	VARISTOR	SEVY0004001	18 V, ,SMD ,3pF, 1005		
6	VA303	VARISTOR	SEVY0003801	18 V, ,SMD ,		
6	VA304	VARISTOR	SEVY0003801	18 V, ,SMD ,		
6	VA305	VARISTOR	SEVY0005201	5.5 V, ,SMD ,1005, 50pF		
6	VA310	VARISTOR	SEVY0005201	5.5 V, ,SMD ,1005, 50pF		
6	VA311	VARISTOR	SEVY0005201	5.5 V, ,SMD ,1005, 50pF		

12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No	Description	Part Number	Spec	Color	Remark
6	X401	VCTCXO	EXSK0004103	26 MHz,2 PPM,10 pF,SMD ,3.2*2.5*1.05 ,2.5ppm at -30 to +85, AFC 0.1V to 1.5V, 2.85V, Double Room , ,26MHz ,2PPM ,2.85V ,3.2 ,2.5 ,1.05 , ,SMD ,R/TP		
5	SAFD00	PCB ASSY,MAIN,SMT TOP	SAFD0071302		Silver	
6	C101	CAP,CHIP,MAKER	ECZH0004402	0.1 uF,16V ,Z ,NP0 ,TC ,1005 ,R/TP		
6	C102	CAP,CHIP,MAKER	ECZH0004402	0.1 uF,16V ,Z ,NP0 ,TC ,1005 ,R/TP		
6	C103	CAP,CHIP,MAKER	ECZH0004402	0.1 uF,16V ,Z ,NP0 ,TC ,1005 ,R/TP		
6	C104	CAP,CHIP,MAKER	ECZH0004402	0.1 uF,16V ,Z ,NP0 ,TC ,1005 ,R/TP		
6	C105	CAP,CHIP,MAKER	ECZH0004402	0.1 uF,16V ,Z ,NP0 ,TC ,1005 ,R/TP		
6	C106	CAP,CHIP,MAKER	ECZH0004402	0.1 uF,16V ,Z ,NP0 ,TC ,1005 ,R/TP		
6	C107	CAP,CHIP,MAKER	ECZH0004402	0.1 uF,16V ,Z ,NP0 ,TC ,1005 ,R/TP		
6	C108	CAP,CHIP,MAKER	ECZH0004402	0.1 uF,16V ,Z ,NP0 ,TC ,1005 ,R/TP		
6	C109	CAP,CHIP,MAKER	ECZH0004402	0.1 uF,16V ,Z ,NP0 ,TC ,1005 ,R/TP		
6	C110	CAP,CHIP,MAKER	ECZH0004402	0.1 uF,16V ,Z ,NP0 ,TC ,1005 ,R/TP		
6	C111	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C112	CAP,CHIP,MAKER	ECZH0004402	0.1 uF,16V ,Z ,NP0 ,TC ,1005 ,R/TP		
6	C113	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C114	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C115	CAP,CHIP,MAKER	ECZH0004402	0.1 uF,16V ,Z ,NP0 ,TC ,1005 ,R/TP		
6	C116	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C117	CAP,CHIP,MAKER	ECZH0004402	0.1 uF,16V ,Z ,NP0 ,TC ,1005 ,R/TP		
6	C118	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C119	CAP,CHIP,MAKER	ECZH0004402	0.1 uF,16V ,Z ,NP0 ,TC ,1005 ,R/TP		
6	C120	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C121	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C122	CAP,CHIP,MAKER	ECZH0004402	0.1 uF,16V ,Z ,NP0 ,TC ,1005 ,R/TP		
6	C124	CAP,CHIP,MAKER	ECZH0004402	0.1 uF,16V ,Z ,NP0 ,TC ,1005 ,R/TP		
6	C125	CAP,CHIP,MAKER	ECZH0004402	0.1 uF,16V ,Z ,NP0 ,TC ,1005 ,R/TP		
6	C126	CAP,CHIP,MAKER	ECZH0004402	0.1 uF,16V ,Z ,NP0 ,TC ,1005 ,R/TP		
6	C127	CAP,CHIP,MAKER	ECZH0004402	0.1 uF,16V ,Z ,NP0 ,TC ,1005 ,R/TP		
6	C128	CAP,CHIP,MAKER	ECZH0004402	0.1 uF,16V ,Z ,NP0 ,TC ,1005 ,R/TP		
6	C129	CAP,CHIP,MAKER	ECZH0004402	0.1 uF,16V ,Z ,NP0 ,TC ,1005 ,R/TP		
6	C130	CAP,CHIP,MAKER	ECZH0004402	0.1 uF,16V ,Z ,NP0 ,TC ,1005 ,R/TP		
6	C131	CAP,CHIP,MAKER	ECZH0001211	220 nF,10V ,Z ,Y5V ,HD ,1005 ,R/TP		
6	C132	CAP,CERAMIC,CHIP	ECCH0000112	15 pF,50V,J,NP0,TC,1005,R/TP		
6	C133	CAP,CERAMIC,CHIP	ECCH0000112	15 pF,50V,J,NP0,TC,1005,R/TP		
6	C134	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C135	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		

Level	Location No	Description	Part Number	Spec	Color	Remark
6	C136	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C137	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C140	CAP,CERAMIC,CHIP	ECCH0000112	15 pF,50V,J,NP0,TC,1005,R/TP		
6	C141	CAP,CERAMIC,CHIP	ECCH0000112	15 pF,50V,J,NP0,TC,1005,R/TP		
6	C201	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C202	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C203	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C213	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C214	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C218	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C219	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C220	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C221	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C222	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C235	CAP,CHIP,MAKER	ECZH0004402	0.1 uF,16V ,Z ,NP0 ,TC ,1005 ,R/TP		
6	C244	CAP,CHIP,MAKER	ECZH0004402	0.1 uF,16V ,Z ,NP0 ,TC ,1005 ,R/TP		
6	C301	CAP,CERAMIC,CHIP	ECCH0000112	15 pF,50V,J,NP0,TC,1005,R/TP		
6	C302	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C303	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C305	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C306	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C307	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C308	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C311	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C312	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C313	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C326	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C327	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C328	CAP,CERAMIC,CHIP	ECCH0005602	2.2 uF,16V ,K ,X5R ,HD ,1608 ,R/TP		
6	C329	CAP,CERAMIC,CHIP	ECCH0005602	2.2 uF,16V ,K ,X5R ,HD ,1608 ,R/TP		
6	C342	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C343	CAP,CERAMIC,CHIP	ECCH0007801	4.7 uF,10V ,Z ,Y5V ,HD ,1608 ,R/TP		
6	C344	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C495	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C506	CAP,CERAMIC,CHIP	ECCH0000104	3 pF,50V,C,NP0,TC,1005,R/TP		
6	C508	CAP,CERAMIC,CHIP	ECCH0000113	18 pF,50V,J,NP0,TC,1005,R/TP		

Level	Location No	Description	Part Number	Spec	Color	Remark
6	CN302	CONNECTOR,BOARD TO BOARD	ENBY0020401	24 PIN,0.4 mm,ETC , ,H=0.9, Socket		
6	CN303	CONNECTOR,BOARD TO BOARD	ENBY0023301	44 PIN,0.4 mm,ETC , ,H=0.9, Socket		
6	CN401	CONN,RF SWITCH	ENWY0004001	,SMD ,1.3 dB,		
6	D301	DIODE,SWITCHING	EDSY0017601	USF ,30 V,1 A,R/TP , ,; , , ,22A , , ,667mW ,[empty] ,[empty] ,[empty] ,1		
6	FB201	FILTER,BEAD,CHIP	SFBH0009901	120 ohm,1005 ,		
6	FB202	FILTER,BEAD,CHIP	SFBH0009901	120 ohm,1005 ,		
6	FB301	FILTER,BEAD,CHIP	SFBH0007102	10 ohm,1005 ,Ferrite Bead		
6	FL301	FILTER,EMI/POWER	SFEY0010501	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (100Ohm,15pF), Pb-free		
6	FL302	FILTER,EMI/POWER	SFEY0010501	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (100Ohm,15pF), Pb-free		
6	FL303	FILTER,EMI/POWER	SFEY0010501	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (100Ohm,15pF), Pb-free		
6	FL304	FILTER,EMI/POWER	SFEY0010501	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (100Ohm,15pF), Pb-free		
6	LD201	DIODE,LED,MODULE	EDLM0008601	WHITE ,1 LED,2.0*1.5*0.45 ,R/TP ,PB-FREE		
6	Q201	TR,BJT,NPN	EQBN0007101	EMT3 ,0.15 W,R/TP ,LOW FREQUENCY		
6	Q202	TR,BJT,NPN	EQBN0007001	SC-70 ,.1 W,R/TP ,Pb free		
6	Q301	TR,BJT,ARRAY	EQBA0002701	EMT6 ,150 mW,R/TP ,NPN, PNP, 150 mA		
6	Q302	TR,FET,P-CHANNEL	EQFP0004501	SOT-323 ,.29 W,1.8 V,.86 A,R/TP ,P-Chanel MOSFET, Pb free		
6	R101	RES,CHIP,MAKER	ERHZ0000488	4.7 ohm,1/16W ,J ,1005 ,R/TP		
6	R103	RES,CHIP	ERHY0000166	390 Kohm,1/16W ,F ,1005 ,R/TP		
6	R104	RES,CHIP,MAKER	ERHZ0000204	100 Kohm,1/16W ,F ,1005 ,R/TP		
6	R105	RES,CHIP,MAKER	ERHZ0000267	3300 ohm,1/16W ,F ,1005 ,R/TP		
6	R106	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	R109	RES,CHIP,MAKER	ERHZ0000441	22 ohm,1/16W ,J ,1005 ,R/TP		
6	R110	RES,CHIP,MAKER	ERHZ0000441	22 ohm,1/16W ,J ,1005 ,R/TP		
6	R111	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	R112	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R114	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
6	R115	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R116	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	R117	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	R118	RES,CHIP,MAKER	ERHZ0000465	3300 ohm,1/16W ,J ,1005 ,R/TP		
6	R119	RES,CHIP,MAKER	ERHZ0000441	22 ohm,1/16W ,J ,1005 ,R/TP		
6	R120	RES,CHIP,MAKER	ERHZ0000441	22 ohm,1/16W ,J ,1005 ,R/TP		
6	R121	RES,CHIP,MAKER	ERHZ0000244	22 Kohm,1/16W ,F ,1005 ,R/TP		

Level	Location No	Description	Part Number	Spec	Color	Remark
6	R129	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	R130	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	R131	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	R132	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	R203	RES,CHIP,MAKER	ERHZ0000411	120 ohm,1/16W ,J ,1005 ,R/TP		
6	R206	RES,CHIP,MAKER	ERHZ0000411	120 ohm,1/16W ,J ,1005 ,R/TP		
6	R207	RES,CHIP	ERHY0003201	1000 ohm,1/16W ,F ,1005 ,R/TP		
6	R208	RES,CHIP,MAKER	ERHZ0000411	120 ohm,1/16W ,J ,1005 ,R/TP		
6	R210	RES,CHIP,MAKER	ERHZ0000411	120 ohm,1/16W ,J ,1005 ,R/TP		
6	R212	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R213	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R214	RES,CHIP,MAKER	ERHZ0000443	2200 ohm,1/16W ,J ,1005 ,R/TP		
6	R215	RES,CHIP,MAKER	ERHZ0000443	2200 ohm,1/16W ,J ,1005 ,R/TP		
6	R221	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R223	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R224	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R229	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R230	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R231	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R233	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R271	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	R301	RES,CHIP,MAKER	ERHZ0000486	47 Kohm,1/16W ,J ,1005 ,R/TP		
6	R302	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	R303	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R304	RES,CHIP,MAKER	ERHZ0000529	1.5 Kohm,1/16W ,J ,1005 ,R/TP		
6	R305	RES,CHIP,MAKER	ERHZ0000486	47 Kohm,1/16W ,J ,1005 ,R/TP		
6	R306	RES,CHIP,MAKER	ERHZ0000533	7.5 Kohm,1/16W ,J ,1005 ,R/TP		
6	R307	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	R311	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R312	RES,CHIP,MAKER	ERHZ0000203	10 Kohm,1/16W ,F ,1005 ,R/TP		
6	R314	RES,CHIP,MAKER	ERHZ0000279	39 Kohm,1/16W ,F ,1005 ,R/TP		
6	R315	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R318	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R319	RES,CHIP,MAKER	ERHZ0000203	10 Kohm,1/16W ,F ,1005 ,R/TP		
6	R384	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R385	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R386	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		

12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No	Description	Part Number	Spec	Color	Remark
6	R387	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	R396	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	R397	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	R401	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	SPFY00	PCB,MAIN	SPFY0139301	FR-4 ,0.8 mm,STAGGERED-10 ,KE770 MAIN PCB ,; , , , , , , , , , ,		
6	SW401	CONN,RF SWITCH	ENWY0005301	,SMD , dB,H=1.85 ,; ,3.00MM ,STRAIGHT ,RF ADAPTER ,SMD ,R/TP ,AU , ,		
6	U101	IC	EUSY0328701	BGA ,105 PIN,R/TP ,1G Nor+256M SDRAM, 1 8V I/O(65nm)		
6	U102	IC	EUSY0246101	WCSP(0.23mm Large Bump) ,5 PIN,R/TP ,Single 2-input positive AND gate, Pb Free		
6	U103	IC	EUSY0274601	BGA ,293 PIN,R/TP ,EDGE BASE BAND S-GOLD2		
6	U202	IC	EUSY0238302	TDFN44-16 ,16 PIN,R/TP ,4LED, Flash(up to 250mA)Charge pump,PBFREE		
6	U205	IC	EUSY0102802	Micropak ,8 PIN,R/TP ,Daul 2 input AND gate,		
6	U207	IC	EUSY0251101	QFN ,16 PIN,R/TP ,Ultra Low Ron Dual DPDT Analog switch, Pb Free		
6	U209	DIODE,TVS	EDTY0006501	SC70-6L ,5.25 V,100 W,R/TP ,		
6	U301	IC	EUSY0254701	DFN 3*3*0.9 ,10 PIN,R/TP ,Charger IC, I Max 1A, Wall Adaptor/USB Charger		
6	U304	IC	EUSY0277501	DFN ,10 PIN,R/TP ,DUAL(2.8V/150mA , 1.5V/300mA) LDO PBFREE		
6	U403	IC	EUSY0279801	SC70 ,6 PIN,R/TP ,Dual Buffer, Pb Free		
6	X101	X-TAL	EXXY0018701	32.768 KHz,20 PPM,12.5 pF,70 Kohm,SMD ,3.2*1.5*0.9 ,		
3	SVCY00	CAMERA	SVCY0012901	CMOS ,MEGA ,2M FF (FPCB, Samsung 1/4")		

12.3 Accessory

Note: This Chapter is used for reference, Part order is ordered by SBOM standard on GCSC

Level	Location No	Description	Part Number	Spec	Color	Remark
3	ADEY00	DATA KIT	ADEY0001085	KE770 Data Kit for CIS/English	Without Color	
4	MCHZ00	COMPACT DISK	MCHZ0033001	COMPLEX, (empty), , , , ,	Silver	
3	MCJA00	COVER,BATTERY	MCJA0037601	PRESS, STS, 0.5, , , ,	TITANIUM	55
3	MHBY00	HANDSTRAP	MHBY0003612	COMPLEX, (empty), , , , ,	Without Color	
3	MPHY00	PROTECTOR	MPHY0009801	COMPLEX, (empty), , , , ,	Silver	
3	SBPL00	BATTERY PACK,LI-ION	SBPL0085603	3.7 V,800 mAh,1 CELL,PRISMATIC ,CMW PJT BATT, Innerpack, Europe Label, Pb-Free ,; ,3,7 ,800 ,0.2C ,PRISMATIC ,43x34x46 , ,ALLTEL SILVER ,Innerpack ,CMW Bar	Without Color	
3	SGDY00	DATA CABLE	SGDY0010901	LG-US03K ,18pin USB DataCable		
3	SGEY00	EAR PHONE/EAR MIKE SET	SGEY0005529	, , , , , , , , ,		
3	SSAD00	ADAPTOR,AC-DC	SSAD0021304	100-240V ,5060 Hz,4.8 V,0.9 A,CB & CE & GOST ,18pin plug		
		ADAPTOR,AC-DC	SSAD0021303	100-240V ,5060 Hz,4.8 V,0.9 A,CB & CE & GOST ,18pin plug		
3	WSAY00	SOFTWARE,APPLICATION	WSAY0083301	070307_Mobile Sync		

Note